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WILDLIFE REVIEW

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UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

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WILDLIFE REVIEW

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Except as indicated, abstracts are by Kenneth J. Chiavetta, editor,
and Mary L. Llewellyn, editorial assistant.

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NATURAL RESOURCES & CLIMATE

U.S. Department of the Interior. NATURAL RESOURCES OF MARYLAND. *USDI.* 56 p., illus. 1969. For sale at 75¢ by Supt. Documents. *WR 135: 2*
With a section on fish and wildlife.

SOILS

Begg, E. L., and others. SOIL SURVEY OF GLENN COUNTY, CALIFORNIA. *SCS.* ii + 198 p., 14 figs. + double-fold maps based on aerial photos and bound in. May 1968. Sold by Supt. Documents. *WR 135: 2*

Calhoun, John W., and others. SOIL SURVEY OF BEN HILL AND IRWIN COUNTIES, GEORGIA. *SCS.* i + 64 p., 11 figs. + single-fold maps based on aerial photos and bound in. Apr. 1969. Sold by Supt. Documents. *WR 135: 2*
With a section on wildlife

Harper, M. Dean. SOIL SURVEY OF WASHINGTON COUNTY, ARKANSAS. *SCS.* i + 94 p., 15 figs. + single-fold maps based on aerial photos and bound in. Mar. 1969. Sold by Supt. Documents. *WR 135: 2*
With a section on the use of the soils for wildlife.

Kirschner, F. R., and others. SOIL SURVEY OF ALLEN COUNTY, INDIANA. *SCS.* i + 76 p., 15 figs. + single-fold maps based on aerial photos and bound in. May 1969. Sold by Supt. Documents. *WR 135: 2*
With a section on wildlife.

Paulk, Herschel L. SOIL SURVEY OF BULLOCH COUNTY, GEORGIA. *SCS.* ii + 75 p., 14 figs. + single-fold maps based on aerial photos and bound in. May 1968. Sold by Supt. Documents. *WR 135:2*
With a section on use of soils for wildlife.

Powley, Van R., and others. SOIL SURVEY OF SALEM COUNTY, NEW JERSEY. *SCS.* i + 86 p., 8 figs. + single-fold maps based on aerial photos and bound in. May 1969. Sold by Supt. Documents. *WR 135: 2*
With a section on the use of soils for wildlife.

Stoner, Herbert R., and others. SOIL SURVEY OF HOWARD COUNTY, TEXAS. *SCS.* i + 68 p., 21 figs. + single-fold maps based on aerial photos and bound in. Mar. 1969. Sold by Supt. Documents. *WR 135: 2*

BIBLIOGRAPHIES, DIRECTORIES, BIOGRAPHY, HISTORY

Durrant, Stephen D. EUGENE RAYMOND HALL--BIOGRAPHY AND BIBLIOGRAPHY. *Univ. Kans. Mus. Nat. Hist. Misc. Publ.* no. 51. p. 9-24. 11 July 1969. *WR 135: 3*
[Univ. Utah, Salt Lake City.] The bibliography consists of 309 papers relative to mammalogy, published from 1921-1968.

WILDLIFE--BIOTAS, ECOLOGY, NATURAL HISTORY

Blackburn, A. THE BIRDLIFE OF CODFISH ISLAND. *Notornis* 15(2): 51-65. June 1968. [From J. Mammal. 59(2), 1969.] *WR 135: 3*
"Includes notes on 5 mammals."

Bromlei, G. F., V. A. Kostenko, and M. V. Okhotina. [THE ECOLOGY OF THE MAMMALS AND BIRDS OF THE SOUTH PART OF SIKHOTA-ALIN ISLAND AND THEIR ROLE IN THE RENEWAL OF THE KOREAN PINE.] In: *(Problems of biology in the Far East.)* (Vladivostok). p. 74-76. 1966. [From Biol. Abstr. 49(5), 1968, from Referat. Zhur., Biol., 1966, no. 11I562. Transl. of Russian abstr.] *WR 135: 3*

Foster, William L., and James Tate, Jr. THE ACTIVITIES AND COACTIONS OF ANIMALS AT SAPSUCKER TREES. *Living Bird* 5: 87-113, 12 figs. 1966. *WR 135: 3*
[Richmond High School, Richmond, Mo.] Animal visitors--insects, birds, and mammals--were consistently associated with sapsucker feeding trees, attracted to the flowing sap and/or insect life at the trees. Butterflies, moths, flies, hornets, and bees were the most numerous insect groups. Birds totaling 20 species appeared at the feeding trees. The ruby-throated hummingbird was the most numerous of all birds, including the sapsucker itself. Segregation of the sexes of hummingbirds to specific feeding areas was observed. A female hummingbird built a nest within fifty feet of a feeding tree, and its activities centered about both the tree and nest. Bats, northern flying squirrels, and red squirrels were always associated with sapsucker trees. In studying the round-the-clock activities and interrelationships of all the animals visiting the sapsucker trees, we found that a prominent social hierarchy developed among the more frequent visitors and that the summer feeding trees of yellow-bellied sapsuckers have a significant effect on the local ecosystem.--From summ.

Popkova, I. F., and A. S. Popkov. [BIRDS AND MAMMALS OF THE ZAKATALI STATE PRESERVE.] *Trudy Zapovednikov Azerb.* 1: 159-187. 1965. [From Biol. Abstr. 49 (7), 1968, from Referat. Zhur., Biol., 1966, no. 11I85. Transl. of Russian abstr.] *WR 135: 3*

Won, Hon Ku. [MAMMALS AND BIRDS OF KOREA.] *Priroda* 12: 103-105. 1959. [From Biol. Abstr. 49(11), 1968, from Referat. Zhur., Biol., 1960, no. 99664. Transl. of Russian abstr.] *WR 135: 3*

WILDLIFE--NATURE PROTECTION & RARE & EXTINCT SPECIES

Eloff, G. THE PASSING OF THE TRUE QUAGGA AND THE LITTLE KLIBBOLIKHONNIFONTEIN BURCHELL'S ZEBRA. WHICH IS TO BE NEXT, THE CAPE MOUNTAIN ZEBRA OR WAHLBERG'S ZEBRA OF ZULULAND? *Tydskr. Natuurwet.* (Pretoria) 6(3): 193-207. Sept. 1966. [From J. Mammal. 50(2), 1969. In English with Afrikaans summ.] *WR 135: 3*

WILDLIFE--EFFECTS OF CHEMICALS, WEATHER, CARS, ETC.

Carr, Harold D. A LITERATURE REVIEW ON EFFECTS OF HERBICIDES ON SAGE GROUSE. *Colo. Div. Game, Fish & Parks Spec. Rept.* no. 13. iv + 16 p. Aug. 1968. Price $1.00. *WR 135: 3*
The densities of sagebrush and forbs decrease following application of 2,4-D resulting in habitat unsuitable for sage grouse. Sagebrush may repopulate sprayed areas, depending upon grazing management and responses of grasses.

Dustman, Eugene H., and Lucille F. Stickel. THE OCCURRENCE AND SIGNIFICANCE OF PESTICIDE RESIDUES IN WILD ANIMALS. *Ann. N.Y. Acad. Sci.* 160(1): 162-172. 23 June 1969. *WR 135: 4*

[Patuxent Wildl. Res. Center, Laurel, Md.] On numerous occasions birds, fish, and mammals have died in conspicuous numbers following pesticide treatment programs. More long-lasting and ecologically significant changes in populations are less conspicuous in the early stages. Results of numerous experiments and studies are cited to demonstrate the harmful aspects of organochlorine pesticides. Eighty-two references are given.

Hodge, Harold C., Alfred M. Boyce, William B. Deichmann, and Hermann F. Kraybill. TOXICOLOGY AND NO-EFFECT LEVELS OF ALDRIN AND DIELDRIN. *Toxicol. Appl. Pharmacol.* 10(3): 613-675. 1967. [From Biol. Abstr. 49(15), 1968.] *WR 135: 4*

[Univ. Rochester, Rochester, N.Y.] Quail, pheasant and turkey were among the animals tested.

Hunt, L. Barrie, and Ronald J. Sacho. RESPONSE OF ROBINS TO DDT AND METHOXYCHLOR. *J. Wildl. Mgmt.* 33(2): 336-345. Apr. 1969. *WR 135: 4*

[Eastern Ill. Univ., Charleston.] Abstract: When exposed to methoxychlor rather than DDT, robins *(Turdus migratorius)* sustained lower mortality under both laboratory and field conditions. Comparisons of the two insecticides on captive birds involving several modes of delivery produced variable results, but it was impossible to produce methoxychlor poisoning consistently with doses as high as 3,750 mg/kg. Whenever elms were sprayed at greater than 10 lb DDT/acre, wild robin populations apparently suffered spring mortality over 85%, but when methoxychlor was substituted at similar rates, adult mortality in the same period was reduced to 24%. With DDT treatments, virtually no reproduction occurred owing mainly to adult losses but immediately after methoxychlor was first used, 17 of 22 nests on a 61.2-acre study area were successful with 16 producing at least 44 fledglings. Despite the small samples, 77% nesting success and 2.8 young/successful nest compared favorably with prespray data. Residues of DDT, DDE, TDE, and methoxychlor were recovered from soils and at higher concentrations from three earthworm groups, but no methoxychlor was detected in bird tissues. Adult robins exposed to both DDT and methoxychlor had significantly higher DDE in both brain and breast muscle than those exposed only to DDT. Breast residues in young robins were approximately one-fourth those in adults, and death could not be definitely attributed to poisoning.

Robinson, J., V. K. H. Brown, A. Richardson, and M. Roberts. RESIDUES OF DIELDRIN (HEOD) IN THE TISSUES OF EXPERIMENTALLY POISONED BIRDS *(COTURNIX COTURNIX JAPONICA, COLUMBA LIVIA). Life Sci.* 6(11, pt. 1): 1207-1220. 1967. [From Biol. Abstr. 49(8), 1968.] *WR 135: 4*

[Tunstall Lab., Sittingbourne, Kent, England.]

Stickel, L., and W. Stickel. DISTRIBUTION OF DDT RESIDUES IN TISSUES OF BIRDS IN RELATION TO MORTALITY, BODY CONDITION, AND TIME. *Industrial Med. & Surgery* 38(3): 44-53, 4 figs. Mar. 1969. In English with Spanish summ. *WR 135: 4*

[Patuxent Wildl. Res. Center, Laurel, Md.] Clearcut differences between concentrations of DDT plus DDD in brains of dead birds and in brains of equally exposed survivors provided a basis for diagnosis of DDT poisoning. Among cowbirds used in this study, heavier birds survived longest on a DDT dosage on which all succumbed within 11 days. Carcass residues of DDT were lower in dead birds than in survivors that had been on dosage for the same lengths of time. Carcasses of survivors contained more than twice the DDT in dead birds, suggesting storage without metabolism as a protective mechanism.--From abstr.

Walker, C. H., and D. H. Mills. ORGANIC CHLORINE INSECTICIDE RESIDUES IN GOOSANDERS AND RED-BREASTED MERGANSERS. *16th Ann. Rept. Wildfowl Trust 1963-4.* p. 56-57. 1965. *WR 135: 5*
The levels of contamination with dieldrin were in most cases low compared with those reported in other birds feeding on freshwater fish in other areas of Britain.

WILDLIFE--PARASITES & DISEASES

Irvin, A. D. RABIES IN WILDLIFE AND THE POSSIBILITY OF ITS INTRODUCTION TO BRITAIN. *Bull. Mammal Soc.* (London) 30: 6-7. Sept. 1968. [From J. Mammal. 50 (2), 1969.] *WR 135: 5*

Loomis, Richard B. CHIGGERS (ACARINA, TROMBICULIDAE) FROM VERTEBRATES OF THE YUCATAN PENINSULA, MEXICO. *Univ. Kans., Mus. Nat. Hist. Misc. Publ.* no. 50. p. 1-22, 3 figs. 10 June 1969. Price 25¢. *WR 135: 5*
[Calif. State Coll., Long Beach.] In summary, 26 spp. of chiggers, belonging to 15 genera, are reported from the Yucatan Peninsula. Chiggers were recovered from 143 individual vertebrates of 43 spp.

Thorpe, Bert D., Robert W. Sidwell, and David L. Lundgren. EXPERIMENTAL STUDIES WITH FOUR SPECIES OF *BRUCELLA* IN SELECTED WILDLIFE, LABORATORY AND DOMESTIC ANIMALS. *Am. J. Trop. Med. Hyg.* 16(5): 665-674. 1967. [From Biol. Abstr. 49(8), 1968.] *WR 135: 5*
[Univ. Utah, Salt Lake City.]

Zimmerman, W. J., and E. D. Hubbard. TRICHINIASIS IN WILDLIFE OF IOWA. *Am. J. Epidemiol.* 90(1): 84-92. July 1969. *WR 135: 5*
[Iowa State Univ., Ames.] Trichinae were detected in 15 spp. of wildlife native to Iowa: red fox, gray fox, mink, rat, coyote, badger, striped skunk, spotted skunk, opossum, muskrat, raccoon, beaver, great horned owl, fox squirrel, and least weasel.--From abstr.

WILDLIFE--TECHNIQUES

Kulik, I. L. [USE OF RADIOACTIVE ISOTOPES IN ECOLOGICAL AND BIOCOENOTIC STUDIES OF TERRESTRIAL VERTEBRATES.] *Zool. Zhur.* 46(8): 1234-1246. 1967. [From Biol. Abstr. 49(16), 1968. In Russian with English summ.] *WR 135: 5*
[Inst. Epidemiol. Microbiol., Acad. Med. Sci. USSR, Moscow, USSR.]

Southern, William E. BIOTELEMETRY: A NEW TECHNIQUE FOR WILDLIFE RESEARCH. *Living Bird* 4: 45-58, 6 figs. 1965. *WR 135: 5*
[Northern Ill. Univ., DeKalb.] General information on the tracking system, and on application of the technique.

WILDLIFE--MANAGEMENT & RESEARCH, GENERAL

Disney, H. J. de S. BUSHFIRES AND THEIR EFFECT ON FAUNA AND FLORA. *Australian Nat. Hist.* 16(3): 87-89. Sept. 1968. [From J. Mammal. 50(2), 1969. *WR 135: 5*

Kelley, John William. AN ANALYSIS AND EVALUATION OF NEW YORK STATE'S FISH AND WILDLIFE MANAGEMENT ACT. *Ph.D. thesis, Cornell Univ.* 346 p. 1968. [From Dissertation Abstr. 29(11B), 1969.] *WR 135: 5*

McKnight, Tom L. BARRIER FENCING FOR VERMIN CONTROL IN AUSTRALIA. *Geographical Rev.* 59(3): 330-347, 9 figs. July 1969. *WR 135: 5*
[Univ. Calif., Los Angeles.] Vermin control, vermin fencing in Australia, types of fences, effectiveness of the fences, vermin fencing today, and a summary view of the fencing program are the major topics of discussion.

Tait, Howard D., [coordinator]. INDEX TO FEDERAL AID PUBLICATIONS IN SPORT FISH AND WILDLIFE RESTORATION AND SELECTED COOPERATIVE RESEARCH PROJECT REPORTS MARCH 1968. *USDI Dept. Library.* Unpaged [700+ p.]. June 1968. *WR 135: 6*
A listing of 5611 publications indexed as to English and Latin descriptor, author and geography. Includes listing of all available published reports from the beginning of the Federal Aid programs (Pittman-Robertson and Dingell-Johnson) through March 1968. Similar listings will be made available by the Denver Public Library for *unpublished* reports.

WILDLIFE--REPORTS OF ORGANIZATIONS & REPORTS OF HARVESTS

Alberta. NINETEENTH ANNUAL REPORT OF THE DEPARTMENT OF LANDS AND FORESTS... FOR THE FISCAL YEAR ENDED MARCH 31st 1968. *Queen's Printer* (Edmonton). 142 p., [28 figs.]. 1968. *WR 135: 6*
With a section on fish and wildlife.

Arizona. ANNUAL REPORT ISSUE JULY 1, 1967--JUNE 30, 1968. [*Ariz.*] *Wildl. Views* 16(1): 1-72, illus. Jan.-Feb. 1969. *WR 135: 6*
With a section on game management, including big game, buffalo, small game, waterfowl, management projects, nongame investigations, and the Cooperative Wildlife Research Unit.

Bureau of Sport Fisheries and Wildlife, compiler. ANNUAL REPORT OF LANDS UNDER CONTROL OF THE BUREAU OF SPORT FISHERIES AND WILDLIFE AS OF JUNE 30, 1968. *US F&WS.* 19 p., 2 figs. 1968. *WR 135: 6*

Hoffman, Donald M., Robert L. Hoover, and Lee E. Yeager, editors. COLORADO GAME RESEARCH REVIEW 1966. *Game Res. Div., Colo. Dept. Game, Fish & Parks.* iv + 46 p., 40 figs. Mar. 1968. Price $1.50. *WR 135: 6*
The report includes research surveys on upland game birds, migratory birds, Canada geese, mourning doves, deer and elk, antelope, bighorn sheep and mountain goats, game ranges, and winter deer and elk ranges, and a summary of an ecological study of Cache la Poudre deer herd.

Hoover, Robert L., Lee E. Yeager, and William T. McKean, editors. COLORADO GAME RESEARCH REVIEW 1967. *Game Res. Div., Colo. Dept. Game, Fish & Parks.* viii + 44 p., 54 figs. June 1968. Price $1.50. *WR 135: 6*
Reports of investigations on deer-elk populations, antelope, bighorn sheep, mountain goats, game range, migratory birds, game birds, the Cache la Poudre deer herd, and 2,4-D application to sagebrush.

New Jersey. ANNUAL REPORT OF THE DIVISION OF FISH AND GAME. *N.J. Dept. Conserv. & Econ. Development.* 48 p., illus. 1968. *WR 135: 6*
For the fiscal year July 1, 1967 - June 30, 1968, with a section on wildlife management.

North Carolina. BIENNIAL REPORT ISSUE FOR THE BIENNIUM JULY 1, 1966 - JUNE 30, 1968. *Wildl. N.C.* 33(1): 1-34. Jan. 1969. *WR 135: 6*
With a section on game, including restoration, management, and surveys.

North Dakota. 1968 ANNUAL REPORT ISSUE. *N. Dak. Outdoors* 31(7): 1-33, illus. Jan. 1969. *WR 135: 6*
With a section on game management including game birds, waterfowl, small mammals, and big game.

Resources for the Future. RESOURCES FOR THE FUTURE / ANNUAL REPORT FOR THE YEAR ENDING SEPTEMBER 30, 1968. *Resources for the Future, Inc.* 129 p., 10 figs. Dec. 1968. *WR 135: 6*
[1755 Massachusetts Ave., N.W., Washington, D.C.] A review of the research problems concerning conservation of natural resources undertaken by the organization, including water resources, land use and management, energy and minerals,

regional and urban studies, appraisals of supply and demand, and special projects in education and international cooperative work. Three special reports are included concerning air pollution from internal combustion engines, urban concepts of natural resources and energy use in the U.S.

Saskatchewan. ANNUAL REPORT SASKATCHEWAN NATURAL RESOURCES 1968. *Saskatchewan Dept. Nat. Resources* (Regina). 48 p., illus. [1968.] *WR 135: 7*
With a section on wildlife.

Vollmar, Fritz, editor. THE ARK UNDER WAY / SECOND REPORT OF THE WORLD WILDLIFE FUND 1965-1967. *World Wildl. Fund.* 321 p., 72 figs. [1968.] *WR 135: 7*
[World Wildl. Fund, Morges, Switzerland.] A brief description of each of the projects being undertaken is given; most of the reports are on development programs, wildlife population surveys, the establishment of new reserves, acquisition of property, and protection programs. The reports are classified as to geological location, in Europe, Africa, Asia, Australia and New Zealand, oceans and oceanic islands, North and Central America, South America, and international programs.

Walsh, Roy E. MARYLAND BOARD OF NATURAL RESOURCES TWENTY-FOURTH ANNUAL REPORT / 1967. *Md. Board Nat. Resources.* xiv + 219 p., 9 figs. [1968.] *WR 135: 7*
[Easton, Md.] Includes reports on damage of agricultural crops by wildlife in Maryland, strip mining and land reclamation, state game management, technical forestry, and reforestation.

WETLANDS & WILDLIFE

Jahn, L. R., [chairman]. SASKATOON WETLANDS SEMINAR. *Canadian Wildl. Serv. Rept. Ser.*--no. 6. 262 p., illus. 1969. Price $5.25. *WR 135: 7*
Transactions of a seminar on small water areas in the prairie pothole region, held 20-22 Feb. 1967, to mark the opening of the Prairie Migratory Bird Research Centre in Saskatoon, Saskatchewan. The following papers are included: *Waterfowl-production habitat requirements*, F. G. Cooch; *Agricultural use of wetlands*, R. W. Lodge; *Engineering limitations on water transfers*, M. N. LaRose; *Legal considerations of water use*, Grant C. Mitchell; *Economic values of small wetlands*, Ralph Hedlin; *Hydrology of small water areas in the prairie pothole region*, W. S. Eisenlohr, Jr.; *An evaluation of Saskatchewan soil maps and reports*, J. G. Ellis; *Observations on the ecology of wetland vegetation*, J. B. Millar; *Proposed classification of potholes in the glaciated prairie region*, Robert E. Stewart and Harold A. Kantrud; *Some characteristics of wetland basins in central and southwestern Saskatchewan*, J. B. Millar; *Ecological relationships of breeding blue-winged teal to prairie potholes*, Roderick C. Drewien and Paul F. Springer; *Waterfowl-habitat relationships on the Lousana, Alberta, Waterfowl Study Area*, A. G. Smith; *Relationships between waterfowl and water areas on the Redvers Waterfowl Study Area*, Jerome H. Stoudt; *Relationships between the shoveler and its breeding habitat at Strathmore, Alberta*, Herbert J. Poston; *Comments on carrying capacity of small ponds for ducks and possible effects of density on mallard production*, Alex Dzubin; *Prairie potholes from a continental viewpoint*, Walter F. Crissey; and *Assessing breeding populations of ducks by ground counts*, Alex Dzubin.

FORESTLAND--MANAGEMENT FOR & DAMAGE BY WILDLIFE

Hosley, N. W. A SELECTED BIBLIOGRAPHY OF FOREST MANAGEMENT-WILDLIFE MANAGEMENT FOR SOUTHEAST ALASKA. *Southern Ill. Univ. Dept. Forestry Publ.* no. 3. iii + 19 p. Feb. 1969. *WR 135: 7*
More than 175 entries on Alaskan wildlife, under the following headings: general, Alaskan plants, forest management, forestry-wildlife relationships, nutrition, brown-grizzly bears, black bear, Alaska black-tailed deer, moose, mountain goat, wolf, fur bearers, small mammals, blue grouse, and bald eagle.

Kucancanin, S. [THE PROTECTION OF FOREST TREE SEEDLINGS FROM WILDLIFE.] *Sumar* 16(7/8): 160-162. 1968. [From Bibliog. Agr. 33(4), 1969. In Serbo-Croatian.] *WR 135: 8*

MAMMALS--GENERAL

Bougerol, C. LES DESTRUCTIONS DE PETITS CARNIVORES EN FRANCE. [DAMAGE BY SMALL CARNIVORES IN FRANCE.] *Mammalia* 32(3): 525-527. Sept. 1968. [From J. Mammal. 50(2), 1969. In French.] *WR 135: 8*

Chernov, Yu. I. [GEOGRAPHIC ZONES AND ANIMAL WORLD OF DRY LAND. I.] *Zool. Zhur.* 47(7): 973-989, illus. 1968. [From Biol. Abstr. 50(13), 1969. In Russian with English summ.] *WR 135: 8*

Conrad, Roswitha. DIE HAUSTIERE IN DEN FRÜHEN KULTUREN INDIENS. [DOMESTIC ANIMALS IN THE EARLY INDIAN CULTURE.] *Säugetierk. Mitt.* 16(3): 189-258. Aug. 1968. [From J. Mammal. 50(2), 1969. In German with English summ.] *WR 135: 8*

Corke, D. THE DEATHS OF SMALL MAMMALS IN LIVE-TRAPS. *J. Zool.* 153(4): 552. 1967. [From Biol. Abstr. 49(23), 1968.] *WR 135: 8*
[Royal Holloway Coll., Englefield Green, Surrey, England.]

Getz, Lowell L. RESPONSES OF SELECTED SMALL MAMMALS TO WATER. *Univ. Conn. Occas. Pap., Biol. Sci. Ser.* 1(2): 71-81. Apr. 1967. [From J. Mammal. 50(2), 1969.] *WR 135: 8*
[Univ. Conn., Storrs.]

Heintz, Natscha, and Magnar Norderhaug. IAKTTAGELSER OVER DYRELIVET PA SVALBARD. [OBSERVATIONS OF THE ANIMAL LIFE IN SVALBARD.] *Norsk Polarinst. Arbok 1965.* p. 103-118, illus. 1966. [From Biol. Abstr. 49(16), 1968. In Norwegian with English summ.] *WR 135: 8*

Jones, J. Knox, Jr., editor. CONTRIBUTIONS IN MAMMALOGY. *Univ. Kans. Mus. Nat. Hist. Misc. Publ.* no. 51. 428 p., 122 figs. 11 July 1969. *WR 135: 8*
A collection of papers on mammalogy contributed by former students of Dr. E. Raymond Hall, some of which would be of interest to wildlifers. These are listed separately in this issue of *WR*.

Kruuk, H., and M. Turner. COMPARATIVE NOTES ON PREDATION BY LION, LEOPARD, CHEETAH AND WILD DOG IN THE SERENGETI AREA, EAST AFRICA. *Mammalia* 31(1): 1-27. 1967. [From Biol. Abstr. 49(15), 1968. In English with French summ.] *WR 135: 8*
[Serengeti Res. Inst., Arusha, Tanzania.]

Peterson, Randolph L. RECENT MAMMAL RECORDS FROM THE GALAPAGOS ISLANDS *(LASIURUS CINEREUS, NESORYZOMYS SWARTHI).* *Mammalia* 30(3): 441-445, illus. 1966. [From Biol. Abstr. 49(9), 1968. In English with French summ.] *WR 135: 8*

Saint Girons, Marie-Charlotte. LE RYTHME CIRCADIEN DE L'ACTIVITÉ CHEZ LES MAMMIFÈRES HOLARCTIQUES. [CIRCADIAN RHYTHM OF HOLARCTIC MAMMALS.] *Mem. Mus. Natl. Hist. Nat. Nouv. Ser. A Zool.* 40(3): 101-187, illus. 1966. [From Biol. Abstr. 49(3), 1968. In French with English summ.] *WR 135: 8*
[Lab. Ecol. Gen. Mus., Brunoy, France.]

Sinclair, Norman R., Lowell L. Getz, and Frederick S. Bock. INFLUENCE OF STONE WALLS ON THE LOCAL DISTRIBUTION OF SMALL MAMMALS. *Univ. Conn. Occas. Pap., Biol. Sci. Ser.* 1(2): 43-62, illus. 1967. [From Biol. Abstr. 49(16), 1968.] *WR 135: 8*
[Cornell Univ., Ithaca, N.Y.] *"Peromyscus leucopus, Clethrionomys gapperi, Microtus pennsylvanicus, Zapus hudsonius, Blarina brevicauda,* and *Sorex cinereus."*

MAMMALS--GENERAL--Continued

Vereshchagin, N. K., and B. Batyrov. [FRAGMENTS OF THE HISTORY OF MIDDLE ASIA FAUNA OF MAMMALIA.] *Bull. Moscow Obshch. Ispit. Prirody (Biol.)* 72(4): 104-115. 1967. [From Biol. Abstr. 49(17), 1968. In Russian with English summ.] *WR 135: 9*

MAMMALS--TECHNIQUES

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MAMMALS--POPULATIONS, HOME RANGES, COMMUNITIES

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[Univ. N. Mex., Albuquerque.] The majority of distribution and variation patterns in western North America were probably shaped by alternating boreal and desert conditions.--From summ.

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[Southern Ill. Univ., Carbondale.] Annotated list of 41 spp.

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[Univ. Western Australia, Nedlands, Australia.]

Speth, Rudolph Lynn. SOCIAL STRUCTURE OF SMALL MAMMAL POPULATIONS AT THE NATIONAL REACTOR TESTING STATION, IDAHO. *Ph.D. thesis, Brigham Young Univ.* 149 p. 1969. [From Dissertation Abstr. 29(11B), 1969.] *WR 135: 11*

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[Slovak Akad. Sci., Banska Stiavnica, Czechoslovakia.]

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[Northern Ariz. Univ., Flagstaff.] *"Sorex vagrans, Eutamias minimus, Thomomys talpoides, Peromyscus maniculatus,* and *Microtus montanus."*

Wilson, Vivian J. THE LARGE MAMMALS OF THE MATOPOS NATIONAL PARK. *Arnoldia* 4(13): 1-32, 3 [figs.]. 1 Feb. 1969. *WR 135: 11*
[Natl. Mus., Bulawayo, Rhodesia.] Each species is discussed in detail, including occurrence, distribution, breeding, predators, and food habits.

MAMMALS--PARASITES & DISEASES

Beaucournu, J. C. LES ANOPLOURES DE LAGOMORPHES, RONGEURS ET INSECTIVORES, DANS LA RÉGION PALÉARCTIQUE OCCIDENTALE ET EN PARTICULIER EN FRANCE. [THE ANOPLURA OF LAGOMORPHS, RODENTS AND INSECTIVORES IN THE WESTERN PALEARCTIC REGION AND ESPECIALLY IN FRANCE.] *Ann. Parasitol.* (Paris) 43(2): 201-271. Mar./Apr. 1968. [From J. Mammal. 50(2), 1969. In French with English summ.] *WR 135: 11*

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[Univ. Lund, Lund, Sweden.]

Chiriac, El., and P. Barbu. CU PRIVIRE LA HELMINTOFAUNA UNOR MICROMAMIFERE DIN R.P.R. [REGARDING THE HELMINTHOFAUNA IN SMALL MAMMALS OF ROMANIA.] *An. Univ. Bucuresti Ser. Stiint. Natur.* 12(38): 181-191, illus. 1963. [From Biol. Abstr. 49(2), 1968. In Romanian with Russian and French summ.] *WR 135: 11*

Constantine, Denny G., Gordon C. Soloman, and Dora F. Woodall. TRANSMISSION EXPERIMENTS WITH BAT RABIES ISOLATES: RESPONSES OF CERTAIN CARNIVORES AND RODENTS TO RABIES VIRUSES FROM FOUR SPECIES OF BATS. *Am. J. Vet. Res.* 29(1): 181-190. 1967. [From Biol. Abstr. 49(7), 1968.] *WR 135: 11*
[Nav. Biol. Lab., Oakland, Calif.]

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[Czechoslovak Acad. Sci., Bratislava, Czechoslovakia.]

Layne, James N. HOST AND ECOLOGICAL RELATIONSHIPS OF THE PARASITIC HELMINTH *CAPILLARIA HEPATICA* IN FLORIDA MAMMALS. *Zoologica* 53(4): 107-122, 4 figs. + 1 pl. Winter 1968. *WR 135: 12*
[Archbold Biol. Sta., Lake Placid, Fla.] Of 2,254 specimens of 27 spp. examined, 3 spp. of rodents *(Peromyscus floridanus, P. gossypinus,* and *Sigmodon hispidus)* were infected. Infections were largely restricted to scrub and related habitats. In all three host species, infection rates were greater in older age classes. Males tended to have a higher, but not statistically significant, infection rate.--From summ.

Myers, Betty June, and Robert E. Kuntz. NEMATODE PARASITES OF MAMMALS (DERMOPTERA, PRIMATES, PHOLIDOTA, RODENTIA, CARNIVORA, AND ARTIODACTYLA) FROM NORTH BORNEO (MALAYSIA). *Canadian J. Zool.* 47(3): 419-421. May 1969. *WR 135: 12*
[Southwest Foundation Res. & Educ., San Antonio, Texas.] Listing of 25 spp. of hosts and the nematode species recovered from each.

SHREWS, MOLES, BATS

Abaturov, B. D. [ECOLOGICAL EFFECTS OF *TALPA* ON SOIL AND VEGETATION.] *Pedobiologia* (Braunschweig) 8(2): 239-264. 1968. [From J. Mammal. 50(2), 1969. In Russian with German and English summ.] *WR 135: 12*

Alexandrova, I. V. [AN EXPERIENCE OF THE LONG-TERM KEEPING OF MOLES *(TALPA EUROPAEA)* IN CAPTIVITY.] *Zool. Zhur.* 47(5): 785-786. May 1968. [From J. Mammal. 50(2), 1969. In Russian with English summ.] *WR 135: 12*

Birney, Elmer C., and James D. Rising. NOTES ON DISTRIBUTION AND REPRODUCTION OF SOME BATS FROM KANSAS, WITH REMARKS ON INCIDENCE OF RABIES. *Trans. Kans. Acad. Sci.* 70(4): 519-524, 1 fig. 12 Mar. 1968. *WR 135: 12*
[Univ. Kans., Lawrence.] Notes on 6 spp.

Brenner, Fred J. BEOBACHTUNGEN AN ZWEI BRUTKOLONIEN DER GROSSEN BRAUNEN FLEDERMAUS. [OBSERVATION UPON TWO BREEDING COLONIES OF THE BIG BROWN BAT.] *Umschau Wiss. Tech.* 68(15): 474-475. 18 July 1968. [From J. Mammal. 50(2), 1969. In German.] *WR 135: 12*

Brosset, A., and G. Dubost. CHIROPTÈRES DE LA GUYANE FRANCAISE. [CHIROPTERA OF FRENCH GUIANA.] *Mammalia* 31(4): 583-594, illus. 1967. [From Biol. Abstr. 49(10), 1968. In French.] *WR 135: 12*
[Mus. Natl. Hist. Nat., Brunoy, France.]

Buckner, Charles H. SOME ASPECTS OF THE POPULATION ECOLOGY OF THE COMMON SHREW, *SOREX ARANEUS*, NEAR OXFORD, ENGLAND. *J. Mammal.* 50(2): 326-332, 2 figs. June 1969. *WR 135: 12*
[Forestry Branch, 25 Dafoe Rd., Winnipeg, Canada.] Abstract: Populations of the common shrew, *Sorex araneus*, reached a high of 2.8 individuals per acre in November 1965 and a low of 0.7 individuals in April 1966. The fall and winter population established well defined home ranges, but most of these were vacated at the onset of mating in the spring. Females established territories in autumn and maintained these at least until the first litters left the nest the following

spring. Males established autumnal home ranges, but deserted these prior to the spring mating period, except in one case where a male established a spring territory encompassing the territories of several females. Infection by the larval nematode, *Porrocaecum* sp., and vagrant habits apparently had a significant bearing upon shrew density. A strong numerical response to a gradient of prey densities seems unlikely.

Christian, John J. MATURATION AND BREEDING OF *BLARINA BREVICAUDA* IN WINTER. *J. Mammal.* 50(2): 272-276. June 1969. *WR 135: 13*
[Albert Einstein Med. Center, Philadelphia, Pa.]

Cifuentes-Cortes, Enrique. RABIA EN UN MURCIELAGO INSECTIVORO, *RHOGEËSSA TUMIDA TUMIDA*-ALLEN 1866. [RABIES IN AN INSECTIVOROUS BAT, *RHOGEËSSA TUMIDA TUMIDA*.] *Rev. Invest. Salud Publ.* 26(2): 125-128. 1966. [From Biol. Abstr. 49 (15), 1968. In Spanish.] *WR 135: 13*
[Inst. Nacl. Virol., Mexico City, Mexico.]

Cockrum, E. Lendell. MIGRATION IN THE GUANO BAT, *TADARIDA BRASILIENSIS*. *Univ. Kans. Mus. Nat. Hist. Misc. Publ.* no. 51. p. 303-336, 8 figs. 11 July 1969. *WR 135: 13*
[Univ. Ariz., Tucson.] Four or more behaviorally (and possibly genetically) separate populations of *Tadarida brasiliensis mexicana* occur in the western U.S. during summer months.

Daan, Serge, and H. J. Wichers. HABITAT SELECTION OF BATS HIBERNATING IN A LIMESTONE CAVE. *Z. Säugetierk.* 33(5): 262-287, 10 figs. 1968. In English with German summ. *WR 135: 13*
[Singel 404, Amsterdam, Netherlands.] Nine species of bats hibernating in the cave showed variations in selecting cave sites. Northern species move to colder entrance areas, while southern species remain in the warmer back parts.--From summ.

Davis, Betty S. *TRYPANOSOMA (MEGATRYPANUM) HOAREI* SP. NOV. (PROTOZOA: TRYPANOSOMATIDAE) FROM SHREWS OF THE GENUS *SOREX* IN CALIFORNIA. *Parasitology* 59(2): 469-491, 67 figs. May 1969. *WR 135: 13*
[Univ. Calif., Carmel Valley.] From *Sorex trowbridgii, S. vagrans, S. ornatus,* and *S. palustris.*

Davis, William B. A REVIEW OF THE SMALL FRUIT BATS (GENUS *ARTIBEUS*) OF MIDDLE AMERICA. *Southwestern Nat.* 14(1): 15-29, 4 figs. 16 May 1969. *WR 135: 13*
[Texas A&M Univ., College Station.]

Dolgov, V. A. [DISTRIBUTION AND NUMBER OF PALEARCTIC SHREWS (INSECTIVORA, SORICIDAE).] *Zool. Zhur.* 46(11): 1701-1712. 1967. [From Biol. Abstr. 49(22), 1968. In Russian with English summ.] *WR 135: 13*
[Moscow State Univ., Moscow, USSR.]

Dolgov, V. A., E. L. Sedykh, A. A. Smirnov, and S. A. Shilova. [ON THE ROLE OF THE COMMON MOLE *(TALPA EUROPAEA)* IN FOCI OF THE TICK ENCEPHALITIS.] *Zool. Zhur.* 47(7): 1108-1110. July 1968. [From J. Mammal. 50(2), 1969. In Russian with English summ.] *WR 135: 13*

Eadie, W. Robert. REPRODUCTION IN MOLES. *Med. Biol. Illus.* 16(3): 187-190, illus. 1966. [From Biol. Abstr. 49(13), 1968.] *WR 135: 13*
[Cornell Univ., Ithaca, N.Y.]

Elliot, Orville, and Marjorie Wong. BLOOD SUGAR OF MALAYAN TREE SHREWS. *J. Mammal.* 50(2): 361-362. June 1969. *WR 135: 13*
[Johns Hopkins Hospital, Baltimore, Md.]

Ennik, G. C. MOLE ACTIVITY IN RELATION TO PASTURE MANAGEMENT AND NITROGEN FERTILIZATION. *Netherlands J. Agr. Sci.* 15(3): 221-228, illus. 1967. [From Biol. Abstr. 49(8), 1968.] *WR 135: 14*
[Inst. Biol. & Chem. Res. Field Crops & Herbage, Wageningen, Netherlands.]

Farney, John, and Eugene D. Fleharty. ASPECT RATIO, LOADING, WING SPAN, AND MEMBRANE AREAS OF BATS. *J. Mammal.* 50(2): 362-367, 1 fig. June 1969. *WR 135: 14*
[Kearney State Coll., Kearney, Nebr.]

Fenton, M. Brock. SUMMER ACTIVITY OF *MYOTIS LUCIFUGUS* (CHIROPTERA: VESPERTILIONIDAE) AT HIBERNACULA IN ONTARIO AND QUEBEC. *Canadian J. Zool.* 47(4): 597-602, 1 fig. July 1969. *WR 135: 14*
[Royal Ontario Museum, Toronto, Ontario, Canada.] Abstract: "Swarming" refers to the summer nocturnal flights through hibernacula by the five species of bats known to hibernate locally. A total of 6400 bats was handled during studies of swarming at 10 hibernacula in Ontario and Quebec from 1966 to 1968. Juveniles comprised over 50% of the swarming population, and the proportion of females in this population was greater than that observed in hibernating populations. Two phases of swarming have been distinguished: the first, occurring in August, lacks both sexual activity and a hibernating population, and the second, which begins in September, involves both sexual activity and the buildup of a hibernating population. Possible functions of swarming are discussed.

Gittleson, Stephen M., and Richard L. Hoover. TRYPANOSOMES OF BATS. *Bat Res. News* 10(2): 13-16. Apr. 1969. *WR 135: 14*
[Univ. Ky., Lexington.] Table of trypanosome species, bat host and intermediate invertebrate host, arranged by geographical locations.

Harmata, Wincenty. THE THERMOPREFERENDUM OF SOME SPECIES OF BATS *(CHIROPTERA). Acta Theriol.* 14(5): 49-62, 1 fig. 5 Apr. 1969. In English with Polish summ. *WR 135: 14*
[Jagiellonian Univ., Cracow, Poland.] *"Rhinolophus hipposideros, Myotis myotis, M. nattereri, M. emarginatus, Eptesicus serotinus, Plecotus auritus,* and *Barbastella barbastellus."*

Hasenclever, H. F., Martha H. Shacklette, Ardith W. Hunter, E. George, and Jan Schwarz. THE USE OF CULTURAL AND HISTOLOGIC METHODS FOR THE DETECTION OF *HISTOPLASMA CAPSULATUM* IN BATS: ABSENCE OF A CELLULAR RESPONSE. *Am. J. Epidemiol.* 90(1): 77-83, 4 figs. July 1969. *WR 135: 14*
[Lab. Microbiol., Natl. Inst. Health, Bethesda, Md.] The microorganism could be directly observed in the mucosa of the intestine more frequently than it could be cultured from this tissue. Little or no tissue reaction to the pathogen could be seen in any organ.--From abstr.

Hayman, R. W., X. Misonne, and W. Verheyen. THE BATS OF THE CONGO AND OF RWANDA AND BURUNDI. *Ann. Mus. Roy. Afr. Cent. Ser. 8 Sci. Zool.* 154. p. 1-99. 1966. [From Biol. Abstr. 49(14), 1968.] *WR 135: 14*

Hyvärinen, Heikki. ON THE MECHANISM AND PHYSIOLOGICAL BACKGROUND OF THE SEASONAL VARIATION OF THE HEIGHT OF THE SKULL IN THE COMMON SHREW *(SOREX ARANEUS L.). Aquilo Ser. Zool.* 6: 7-11, 2 figs. 1968. *WR 135: 14*
[Univ. Oulu, Oulu, Finland.]

Jones, Gwilym S., Fore-Lien Huang, and Yung-Fu Lin. DISTRIBUTION RECORDS OF THE FORMOSAN TAILLESS LEAF-NOSED BAT, *COELOPS FRITHI FORMOSANUS. J. Mammal.* 50 (2): 349-350. June 1969. *WR 135: 14*
[U.S. Naval Med Res. Unit no. 2, Taipei, Taiwan.]

Nellis, David W. ACCLIMATING BATS TO CAPTIVITY. *J. Mammal.* 50(2): 370. June 1969. *WR 135: 14*
[N.Y. Zool. Park, Bronx.] *"Myotis lucifugus, Eptesicus fuscus, Lasiurus borealis, Nocilio labialis* and *Antrozous pallidus."*

Neuhauser, Hans N., and I. Lehr Brisbin, Jr. ENERGY UTILIZATION IN A CAPTIVE SILVER-HAIRED BAT. *Bat Res. News* 10(3): 30-31. July 1969. *WR 135: 15*
[Univ. Ga., Athens.] Caloric intake during the 20 day period averaged 4.86 ± 1.45 (SD) Kcal/ day, with a range of 1.77 to 7.51 Kcal/ day in a captive male *Lasionycteris noctivagans*.

Opperman, J. DIE NAHRUNG DES MAULWURFS *(TALPA EUROPAEA* L. 1758*)* IN UNTERSCHIEDLICHEN LEBENSRÄUMEN. [THE FOOD OF THE MOLE *(TALPA EUROPAEA)* IN VARIOUS HABITATS.] *Pedobiologia* 8(1): 59-74. 1968. [From J. Mammal. 50(2), 1969. In German with English summ.] *WR 135: 15*

Perry, Alfred E., and Clyde F. Herreid II. COMPARISON OF THE TOOTH-WEAR AND LENS-WEIGHT METHODS OF AGE DETERMINATION IN THE GUANO BAT, *TADARIDA BRASILIENSIS MEXICANA*. *J. Mammal.* 50(2): 357-360, 2 figs. June 1969. *WR 135: 15*
[Memphis State Univ., Memphis, Tenn.] "Both aging methods are valuable in population analysis of *T. brasiliensis*, and one is not superior to the other in accuracy. The tooth-wear method of aging permits grouping of individuals into three or four categories in the field and requires little equipment. The eye-lens method requires laboratory weighing, some elaborate equipment, and is more time-consuming; however, it is less subjective and allows for definition of a greater number of age categories."

Seebeck, John H., and E. Hamilton-Smith. NOTES ON A WINTERING COLONY OF BATS. *Victorian Nat.* 84(11): 348-351. 1967. [From Biol. Abstr. 49(10), 1968.] *WR 135: 15*
[Fish & Wildl. Dept., Melbourne, Victoria, Australia.] Abstract: A colony of 2000 *Miniopterus schreibersii* and about 20 *Myotis adversus* were transferred in mid-winter from a tunnel roosting site to a new locality. A high rate of mortality resulted. Reasons for the high mortality rate are discussed, and other observations on the bats are presented.

Serafinski, Wlodzimierz. THE INFLUENCE OF CLIMATIC CONDITIONS ON THE CHARACTERS OF COMMON SHREW *(SOREX ARANEUS* L.*)* POPULATIONS IN POLAND. *Ekologia Polska--Ser. A* 14(38): 750-753, illus. 1966. [From Biol. Abstr. 49(4), 1968.] *WR 135: 15*
[Leszczynska 10, Warsaw, Poland.]

Smith, Paul C., Kwanyuen Lawhaswasd, William E. Vick, and J. S. Stanton. ISOLATION OF RABIES VIRUS FROM FRUIT BATS IN THAILAND. *Nature* 216(5113): 384. 1967. [From Biol. Abstr. 49(15), 1968.] *WR 135: 15*
[Southeast Asia Treaty Organ. Med. Res. Lab., Bangkok, Thailand.]

Spitzenberger, Friederike. DIE ALPENSPITZMAUS *(SOREX ALPINUS* SCHINZ, 1837*)* IN ÖSTERREICH. [*SOREX ALPINUS* SCHINZ, 1837 IN AUSTRIA (DISTRIBUTION, TAXONOMY).] *Ann. Naturhist. Mus. Wien* 69: 313-321. 1965. [From Biol. Abstr. 49(2), 1968. In German.] *WR 135: 15*

Stebbings, R. E. MEASUREMENTS, COMPOSITION AND BEHAVIOR OF A LARGE COLONY OF THE BAT *PIPISTRELLUS PIPISTRELLUS*. *J. Zool.* 156(1): 15-33. Sept. 1968. [From J. Mammal. 50(2), 1969.] *WR 135: 15*

Suthers, Roderick A. WIE ORTEN FISCHFANGENDE FLEDERMÄUSE IHRE BEUTE? [HOW DO FISH-CATCHING BATS LOCATE THEIR PREY?] *Umsch. Wiss. Tech.* 67(21): 693-698, illus. 1967. [From Biol. Abstr. 49(19), 1968. In German.] *WR 135: 15*
[Univ. Ind., Bloomington.]

Villa-R., Bernardo, and Martha Villa Cornejo. ALGUNOS MURCIELAGOS DEL NORTE DE ARGENTINA. [SOME BATS OF NORTHERN ARGENTINA.] *Univ. Kans. Mus. Nat. Hist. Misc. Publ.* no. 51. p. 407-428. 11 July 1969. In Spanish with English summ. *WR 135: 15*
[Univ. Nacl. Autónoma México, México, D.F., México.] Measurements and notes on natural history are recorded for each of the 18 spp. of bats, and comments on systematics and incidence of rabies are incorporated into several accounts.--From summ.

Wimsatt, William A. TRANSIENT BEHAVIOR, NOCTURNAL ACTIVITY PATTERNS, AND FEEDING EFFICIENCY OF VAMPIRE BATS *(DESMODUS ROTUNDUS)* UNDER NATURAL CONDITIONS. *J. Mammal.* 50(2): 233-244. June 1969. *WR 135: 16*
[Cornell Univ., Ithaca, N.Y.]

Wołk, Elżbieta. BODY WEIGHT AND DAILY FOOD INTAKE IN CAPTIVE SHREWS. *Acta Theriol.* 14(4): 35-47, 4 figs. 5 Apr. 1969. In English with Polish summ. *WR 135: 16*
[Polish Acad. Sci., Białowieża, Poland.] *Sorex araneus.* Weight loss during the period from Aug.-Oct. to Jan.-Feb. was 16.7%, while the spring growth increase during the period from Jan.-Feb. to May-June was 37.2%.--From abstr.

RABBITS & PIKAS

Bailey, James A. EXPLORATORY STUDY OF NUTRITION OF YOUNG COTTONTAILS. *J. Wildl. Mgmt.* 33(2): 346-353. Apr. 1969. *WR 135: 16*
[Univ. Mont., Missoula.] Abstract: Domestic grasses and legumes, and wild forbs were tested in feeding and digestion trials with young cottontails *(Sylvilagus floridanus)* during spring, summer, and autumn. Grasses were the poorest foods in all seasons and were particularly indigestible during summer. Legumes were generally better foods than grasses but their nutritive value likewise declined as the plants matured in summer. Among eight species of wild forbs, four were excellent foods during at least one of the three seasons. It is concluded that young cottontails require highly digestible food which can be provided by palatable plants in vigorous growth stages. In habitats managed for cottontails, adequate nutrition of young rabbits can be assured by establishing polytypic stands of wild forbs, the variety of species in such stands providing some plants in a stage of vigorous growth throughout the growing season.

Bailey, James A. QUANTITY OF SOFT PELLETS PRODUCED BY CAGED COTTONTAILS. *J. Wildl. Mgmt.* 33(2): 421. Apr. 1969. *WR 135: 16*
[Univ. Mont., Missoula.] Abstract: Production of the soft pellets that cottontails *(Sylvilagus floridanus)* normally reingest was measured with caged adults on commercial rabbit food. Soft pellets amounted to 30.4% of the total weight of both hard and soft pellets, a result similar to those reported for domestic rabbits *(Oryctolagus cuniculus).*

Borg, K., E. Hanko, T. Krunajević, N.-G. Nilsson, and P. O. Nilsson. ON TULAREMIA IN THE VARYING HARE *(LEPUS TIMIDUS* L.). *Nordisk Vet. Med.* 21: 95-104, 1 fig. + 2 pls. 1969. In English with German and Swedish summ. *WR 135: 16*
[Natl. Vet. Inst., 10405 Stockholm 50, Sweden.] Clinical symptoms are described. An outbreak occurred in Sweden in 1967, reducing the population by as much as 20%. Seventy-five percent of the animals received for examination were females.--From summ.

Depner, Carlton W. COLORIMETRIC DETERMINATION OF INGESTED FOOD DYES PASSED IN FECES OF DOMESTIC RABBITS. *J. Mammal.* 50(2): 382-383. June 1969. *WR 135: 16*
[Bucknell Univ., Lewisburg, Pa.]

Edwards, William R. TABLES FOR ESTIMATING AGES AND BIRTH DATES OF COTTONTAIL RABBITS WITH SUGGESTIONS FOR HANDLING LENSES. *Ill. Nat. Hist. Surv. Biol. Notes* 59: 2-4, illus. 1967. [From Biol. Abstr. 49(10), 1968.] *WR 135: 16*
[Ill. Nat. Hist. Surv., Urbana.]

Forcum, Donald L., Chester D. Rael, John R. Wheeler, and Bryan E. Miller. ABUNDANCE OF COTTONTAILS AND THEIR FLEAS AT RED BLUFF RANCH, NEW MEXICO. *J. Wildl. Mgmt.* 33(2): 422-424. Apr. 1969. *WR 135: 16*
[Health & Social Serv. Dept., Roswell, N. Mex.] Abstract: Estimates of cottontail *(Sylvilagus auduboni)* abundance were positively correlated with overall flea indices ($r = 0.857$) and with the predominant flea species index *(Hoplopsyllus glacialis affinis)* ($r = 0.743$). Some flea species found on these cottontails are known transmitters of plague in New Mexico.

Hansen, R. M., and J. T. Flinders. FOOD HABITS OF NORTH AMERICAN HARES. *Colo. State Univ. Range Sci. Dept., Sci. Ser.* no. 1. ii + 18 p., 3 figs. May 1969. *WR 135: 17*
[Colo. State Univ., Fort Collins.] Food habits and distribution of *Lepus othus, L. arcticus, L. americanus, L. townsendii, L. californicus, L. insularis, L. mexicanus, L. gaillardi, L. alleni, L. flavigularis,* and *L. europaeus.*

Hewson, Raymond. WEIGHTS AND GROWTH RATES IN THE MOUNTAIN HARE *LEPUS TIMIDUS SCOTICUS. J. Zool.* 154(2): 249-262, illus. 1968. [From Biol. Abstr. 49(22), 1968.] *WR 135: 17*

McKinney, Ted D. ACTIVITY OF ACETYLCHOLINESTERASE IN BRAINS OF MALE COTTONTAIL RABBITS. *J. Wildl. Mgmt.* 33(2): 418-420, 1 fig. Apr. 1969. *WR 135: 17*
[Va. Polytech. Inst., Blacksburg.] Abstract: Homogenates from brains of male cottontail rabbits *(Sylvilagus floridanus)* were analyzed for factors affecting colorimetric determination of acetylcholinesterase activity. A brain tissue concentration of 1.33 mg/ml was found satisfactory for study of enzyme activity. The relationship between enzyme activity and substrate concentration was represented by a bell-shaped curve with an optimum substrate concentration of 7.2 X 10^{-4}Mol. True cholinesterase accounted for 92.5% of total substrate hydrolysis.

Ottosson, Ivar. VILTSKADOR OCH SKOGSATERVAXT INOM BLA JUNGFRUNS NATIONALPARK. [BROWSING BY GAME AND FOREST REGENERATION ON THE JUNGFRUN ISLAND, SOUTHERN SWEDEN.] *Acta Fac. Rerum Nat. Univ. Comenianae Chim.* 11: 3-30, illus. 1966. [From Biol. Abstr. 49(10), 1968. In Swedish with German and Spanish summ.] *WR 135: 17*
"Oryctolagus cuniculus and *Lepus timidus."*

Pielowski, Zygmunt. BELT ASSESSMENT AS A RELIABLE METHOD OF DETERMINING THE NUMBERS OF HARES. *Acta Theriol.* 14(9): 133-140, 2 figs. 5 Apr. 1969. In English with Polish summ. *WR 135: 17*
[Polish Hunting Assoc., Res. Sta., Czempiń n/Poznań, Poland.] Numbers of hares were overestimated by 20% with this method.--From abstr.

Pielowski, Zygmunt. SEX RATIO AND WEIGHT OF HARES IN POLAND. *Acta Theriol.* 14(8): 119-131, 2 figs. 5 Apr. 1969. In English with Polish summ. *WR 135: 17*
[Polish Hunting Assoc., Res. Sta., Czempiń, n/Poznań, Poland.] Sex ratio during the autumn-winter period is 48.6:51.4 in favor of females.--From abstr.

Voth, David R., and Ted James. PARASITES OF THE WHITE-TAILED JACKRABBIT IN SOUTHEASTERN NORTH DAKOTA. *Proc. N. Dak. Acad. Sci.* 19: 15-18. 1965. [From Biol. Abstr. 49(4), 1968.] *WR 135: 17*
[Univ. N. Dak., Grand Forks.] *"Lepus townsendi campanius."*

RODENTS--MISCELLANEOUS

Ashby, K. R. STUDIES ON THE ECOLOGY OF FIELD MICE AND VOLES *(APODEMUS SYLVATICUS, CLETHRIONOMYS GLAREOLUS* AND *MICROTUS AGRESTIS)* IN HOUGHALL WOOD, DURHAM. *J. Zool.* 152(4): 389-513, illus. 1967. [From Biol. Abstr. 49(1), 1968.] *WR 135: 17*
[Univ. Durham, Durham, England.]

Askaner, Torsten, and Lennart Hansson. THE EYE LENS AS AN AGE INDICATOR IN SMALL RODENTS. *Oikos* 18(1): 151-153. 1967. [From Biol. Abstr. 49(7), 1968.] *WR 135: 17*

Baker, Rollin H. COTTON RATS OF THE *SIGMODON FULVIVENTER* GROUP. *Univ. Kans. Mus. Nat. Hist. Misc. Publ.* no. 51. p. 177-232, 21 figs. 11 July 1969. *WR 135: 17*
[Mich. State Univ., East Lansing.] Includes a key to the species, the habits and habitat of each, description of variations, and specific identifying characteristics of each species.

Bateman, Gary C. ECOLOGICAL OBSERVATIONS ON *PEROGNATHUS BAILEYI* NEAR SUPERIOR, ARIZONA. *J. Ariz. Acad. Sci.* 5: 16. May 1968. [From J. Mammal. 50(2), 1969. Abstract only.] *WR 135: 18*

Bergström Ulf. OBSERVATIONS ON NORWEGIAN LEMMINGS, *LEMMUS LEMMUS* (L.), IN THE AUTUMN OF 1963 AND THE SPRING OF 1964. *Arkiv Zool.* (Stockholm) 20(3-4): 321-363. 24 June 1968. [From J. Mammal. 50(2), 1969.] *WR 135: 18*

Berry, R. J., I. M. Evans, and B. F. C. Sennitt. THE RELATIONSHIPS AND ECOLOGY OF *APODEMUS SYLVATICUS* FROM THE SMALL ISLES OF THE INNER HEBRIDES, SCOTLAND. *J. Zool.* 152(3): 333-346. July 1967. [From J. Mammal. 50(2), 1969.] *WR 135: 18*

Boice, Robert, and Carol Boice. WATER INTAKE FOLLOWING CAPTURE AND DEPRIVATION IN SOUTHWESTERN RODENTS. *Psychonomic Sci.* 12(3): 104. 5 Sept. 1968. [From J. Mammal. 50(2), 1969.] *WR 135: 18*

Boley, Robert B., and Thomas E. Kennerly. CELLULOLYTIC BACTERIA AND REINGESTION IN THE PLAINS POCKET GOPHER, *GEOMYS BURSARIUS*. *J. Mammal.* 50(2): 348-349. June 1969. *WR 135: 18*
[Univ. Texas, Arlington.]

Bolshakov, V. N. [ON THE RELATIONSHIP OF CLINAL VARIABILITY AND SPECIES STRUCTURE.] *Zool. Zhur.* 47(6): 807-815. June 1968. [From J. Mammal. 50(2), 1969. In Russian with English summ.] *WR 135: 18*
"Clethrionomys, Microtus and *Apodemus."*

Chanudet, F., and M. C. Saint-Girons. COMBAT ENTRE UNE MUSARAIGNE ET UN CAMPAGNOL. [BATTLE BETWEEN A SHREW-MOUSE AND A FIELD MOUSE.] *Penn Bed* 5(44): 175-176, illus. 1966. [From Biol. Abstr. 49(1), 1968. In French.] *WR 135: 18*

Cruzan, John. ECOLOGICAL DISTRIBUTIONS AND INTERACTIONS OF FOUR SPECIES OF *MICROTUS* IN COLORADO. *Ph.D. thesis, Univ. Colo.* 126 p. 1968. [From Dissertation Abstr. 29(9B), 1969.] *WR 135: 18*
Microtus pennsylvanicus was found only on the plains and was more abundant in wet habitats than dry. *M. ochrogaster* was found primarily in the grasslands-montane ecotone of the lower foothills. *M. montanus* ranged throughout the mountains, where it inhabited a wide variety of meadows, from wet bogs to dry hillsides. *M. longicaudus* appears to be confined to relatively wet habitats that have an open growth of trees or bushes.

Czyba, J. C. LES FLUCTUATIONS DE LA FÉCONDITÉ CHEZ LE HAMSTER DORÉ *(MESOCRICETUS AURATUS* WATERHOUSE) AU COURS DE L' ANNÉE. [THE FLUCTUATIONS IN FECUNDITY IN *MESOCRICETUS AURATUS* DURING THE COURSE OF THE YEAR.] *Compt. Rend. Soc. Biol.* (Paris) 162(1): 113-116. 1968. [From J. Mammal. 50(2), 1969. In French.] *WR 135: 18*

Didow, L. A., and J. S. Hayward. SEASONAL VARIATIONS IN THE MASS AND COMPOSITION OF BROWN ADIPOSE TISSUE IN THE MEADOW VOLE, *MICROTUS PENNSYLVANICUS*. *Canadian J. Zool.* 47(4): 547-555, 4 figs. July 1969. *WR 135: 18*
[Carleton Univ., Ottawa, Ontario, Canada.] Abstract: Wild meadow voles were collected each month of the year and analyzed for the mass and composition of their brown adipose tissue. The relative mass of brown adipose tissue decreased with increasing body weight in both summer and winter. Seasonal changes in the relative mass of brown adipose tissue were inversely related to seasonal changes in ambient temperature. In mature voles, the relative mass of brown adipose tissue was lowest during summer (0.5%) and increased rapidly to a level of 1.7% in early winter. Similarly, immature voles had their lowest relative mass in summer (1.0%) and increased this to 2.3% in winter. Both groups showed some decrease in the winter amount of the tissue when the subnivean environment became established. The percentage composition of brown adipose tissue with respect to water, lipid, and protein did not change significantly through the year. The

results provide corroboration for laboratory studies which show that the mass and composition of brown adipose tissue are related to the requirement for cold thermogenesis. In voles, this requirement was present throughout the year and varied only in degree.

Dieterlen, Fritz. JAHRESZEITEN UND FORTPFLANZUNGSPERIODEN BEI DEN MURIDEN DES KIVUSEE-GEBIETES (CONGO). EIN BEITRAG ZUM PROBLEM DER POPULATIONSDYNAMIK IN DEN TROPEN. [SEASONS AND REPRODUCTION PERIODS OF MURIDAE IN THE AREA OF THE LAKE KIVU (CONGO). A CONTRIBUTION TO THE PROBLEM OF POPULATION DYNAMICS IN THE TROPICAL REGIONS.] *Z. Säugetierk.* 32(1): 1-44, illus. 1967. [From Biol. Abstr. 49(9), 1968. In German with English summ.] *WR 135: 19*
[Inst. Rech. Sci. Afrique Cent., Lwiro, Kivu, Congo.]

Dixmeras, J. ORGANISATION PRATIQUE DE LA LUTTE CONTRE LES COMPAGNOLS. [PRACTICAL ORGANIZATION OF FIELD MICE CONTROL.] *Phytoma* 191: 38-42. 1967. [From Biol. Abstr. 49(7), 1968. In French.] *WR 135: 19*
[Inst. Natl. Rech. Agr., Paris, France.]

Dorosz, Josef. HELMINTH PARASITES OF SMALL RODENTS LIVING IN AREAS IRRIGATED BY URBAN SEWAGE OF WROCLAW. *Acta Parasitol. Polonica* 15(47): 375-396. 31 Mar. 1968. [From J. Mammal. 50(2), 1969. In English with Polish summ.] *WR 135: 19*

Douglas, Charles L. ECOLOGY OF POCKET GOPHERS OF MESA VERDE, COLORADO. *Univ. Kans. Mus. Nat. Hist. Misc. Publ.* no. 51. p. 147-175, 8 figs. 11 July 1969. *WR 135: 19*
[Univ. Texas, Austin.] Includes distribution, description of habitat, reproduction, growth, effect of climatic conditions, parasitism, predation, anomalies, and relationship of gophers to archeological sites.

Fairley, J. S. A WOODLAND POPULATION OF *APODEMUS SYLVATICUS* (L.) AT SEAFORDE, CO. DOWN. *Proc. Royal Irish Acad. Sect. B Biol. Geol. Chem. Sci.* 65(B20): 407-424, illus. 1967. [From Biol. Abstr. 49(19), 1968.] *WR 135: 19*
[Queen's Univ., Belfast, Ireland.]

Fisher, Robert Lynn. AN ECOLOGICAL STUDY OF THE RED-BACKED VOLE, *CLETHRIONOMYS GAPPERI GAPPERI* (VIGORS), IN CENTRAL NEW YORK. *Ph.D. thesis, Cornell Univ.* 83 p. 1968. [From Dissertation Abstr. 29(11B), 1969.] *WR 135: 19*

Frisch, O. von, and H. Kahmann. DER GARTENSCHLÄFER *(ELIOMYS)* IN DER CRAU/ SÜDFRANKREICH. [THE GARDEN DORMOUSE IN THE CRAU (FLUVIAL PLAIN OF THE RHONE)/ SOUTHERN FRANCE.] *Z. Säugetierk.* 33(5): 306-312. Oct. 1968. [From J. Mammal. 50(2), 1969. In German with English summ.] *WR 135: 19*

Fuller, W. A., L. L. Stebbins, and G. R. Dyke. OVERWINTERING OF SMALL MAMMALS NEAR GREAT SLAVE LAKE NORTHERN CANADA. *Arctic* 22(1): 34-55, 10 figs. Mar. 1969. In English with French and Russian summ. *WR 135: 19*
"Clethrionomys gapperi, C. rutilus, and *Peromyscus maniculatus."*

Garbuzov, V. K., E. F. Senina, and M. I. Shuvaeva. [CAUSES OF THE SHARP DECREASE IN NUMBERS OF GREAT GERBILS IN THE BOLSHIE BARSUKI SANDS IN 1964.] *Zool. Zhur.* 47(9): 1425-1427. Sept. 1968. [From J. Mammal. 50(2), 1969. In Russian with English summ.] *WR 135: 19*

Getz, Lowell L. RESPONSES OF THE MEADOW VOLE TO WOODY VEGETATION. *Univ. Conn. Occas. Pap., Biol. Sci. Ser.* 1(2): 63-69. Apr. 1967. [From J. Mammal. 50(2), 1969.] *WR 135: 19*
[Univ. Conn., Storrs.]

Getz, Lowell L. INFLUENCE OF LIGHT ON THE ACTIVITY OF THE REDBACK VOLE. *Univ. Conn. Occas. Pap., Biol. Sci. Ser.* 1(3): 83-107. Mar. 1968. [From J. Mammal. 50(2), 1969.] *WR 135: 19*
[Univ. Conn., Storrs.]

Giban, J., and J. Dixmeras. LES ESSAIS EN CHAMPS EFFECTUES SUR CAMPAGNOLS DES CHAMPS 1958-1966. [FIELD TESTS DONE ON FIELD MICE 1958-1966 (PEST CONTROL).] *Phytoma* 191: 31-37. 1967. [From Biol. Abstr. 49(7), 1968. In French.] *WR 135: 20*
[Inst. Natl. Rech. Agr., Paris, France.]

Harling, J. ACTIVITY AND FEEDING PATTERNS OF WATER VOLES IN THE OLD DURHAM BECK, DURHAM. *Bull. Mammal Soc.* (London) 30: 4-5. Sept. 1968. [From J. Mammal. 50(2), 1969.] *WR 135: 20*

Hoffmeister, Donald F. THE SPECIES PROBLEM IN THE *THOMOMYS BOTTAE--THOMOMYS UMBRINUS* COMPLEX OF POCKET GOPHERS IN ARIZONA. *Univ. Kans. Mus. Nat. Hist. Misc. Publ.* no. 51. p. 75-91, 10 figs. 11 July 1969. *WR 135: 20*
[Univ. Ill., Urbana.] Characters employed in distinguishing the two species and their hybrid, were dorsal coloration, number of pectoral mammae, length of baculum, various external and cranial measurements, and position and shape of the maxillo-frontal suture relative to the lacrimal. Between 21 and 29 specimens, out of 109, were hybrids.--From summ.

Holisova, Vera. NOTES ON THE FOOD OF DORMICE (GLIRIDAE). *Zool. Listy* 17(2): 109-114. 1968. [From Biol. Abstr. 49(24), 1968.] *WR 135: 20*
[Inst. Vertebrate Zool., Czechoslovak Acad. Sci., Brno, Czechoslovakia.]

Howard, Walter E., and Rex E. Marsh. MESTRANOL AS A REPRODUCTIVE INHIBITOR IN RATS AND VOLES. *J. Wildl. Mgmt.* 33(2): 403-408. Apr. 1969. *WR 135: 20*
[Univ. Calif., Davis.] Abstract: Mestranol-treated food was periodically free-fed to pairs and groups of adult rats *(Rattus norvegicus)* and voles *(Microtus californicus* and *M. montanus)* to determine the efficacy of this synthesized estrogen as an antifertility agent. Repeated acceptance was poor with rats. When the concentration of mestranol was reduced to 0.005%, repeated acceptance by voles became adequate. Most of the vole offspring receiving this steroid via their mother's milk during the first few days of life failed to develop sexually later in life.

Hsia, Wu-Ping, and W. C. Chung. [THE SUCCESSIONS AND INTERACTIONS OF THE RODENT AND PLANT COMMUNITIES OF ABANDONED FIELDS IN DESERT STEPPE AT CHAGAN-AOBAO, INNER MONGOLIA.] *Acta Zool. Sinica* 18(2): 199-208. 1966. [From Biol. Abstr. 49 (22), 1968. In Chinese with English summ.] *WR 135: 20*

Huminski, Stanislaw. WINTER BREEDING OF THE FIELD VOLE, *MICROTUS ARVALIS* (PALL.) IN THE LIGHT OF AN ANALYSIS OF THE EFFECT OF ENVIRONMENTAL FACTORS ON THE CONDITION OF THE MALE SEXUAL APPARATUS. *Zool. Pol.* 14(3/4): 157-203, illus. 1964. [From Biol. Abstr. 49(8), 1968. In English with Polish and Russian summ.] *WR 135: 20*
[Coll. Agr., Breslau, Poland.]

Ireland, Patrick H., and H. A. Hays. A NEW METHOD FOR DETERMINING THE HOME RANGE OF WOODRATS. *J. Mammal.* 50(2): 378-379. June 1969. *WR 135: 20*
[Univ. Ark., Fayetteville.]

Keller, Barry Lee. REPRODUCTIVE CHANGES IN FLUCTUATING POPULATIONS OF *MICROTUS OCHROGASTER* AND *M. PENNSYLVANICUS* IN SOUTHERN INDIANA. *Ph.D. thesis, Indiana Univ.* 131 p. 1968. [From Dissertation Abstr. 29(11B), 1969.] *WR 135: 20*
Temporal changes in the weight at sexual maturity, pregnancy rate, living embryo production, prenatal mortality, and body-weight distribution of populations of these species were considered. The pattern of reproductive changes was similar to that already described for other cyclic rodents. These changes included a lengthening of the breeding season during the cyclic increase, winter breeding between the cyclic increase and peak years and an early reduction in breeding in the fall of cyclic peak. High body weights occurred in peak populations of both species in a pattern similar to that described for other cyclic voles and lemmings. The weight at sexual maturity was slightly higher during the year of

peak populations in both species. Voles breeding during the winter were significantly heavier than those breeding during the summer. The differential breeding success during the winter of heavy and lighter weight animals may affect the genetic composition of the future peak populations.--From abstr.

Khavanova, M. V., and G. S. Umrikhina. [THE DISTRIBUTION BY STATIONS OF MURINE RODENTS IN THE SUSAMYR RIVER VALLEY.] In: *(Harmful rodents of Kirgiziya.) Ilim* (Frunze). p. 70-74. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 12I1554. Transl. of Russian abstr.] *WR 135: 21*

Kir'yanov, G. I. [FIELD MICE OF THE ALTAI TERRITORY AND THEIR ECONOMIC AND EPIZOOTIC IMPORTANCE.] *Izvest. Altai Otd. Geogr. Obshch. SSSR* 5: 184-186. 1965. [From Biol. Abstr. 49(1), 1968, from Referat. Zhur., Biol., 1966, no. 1I557. Transl. of Russian abstr.] *WR 135: 21*

Kminiak, Milan. PRISPEVOK K POZNANIU BIOTOPOV A OSIDLENIA KRYSY VODNEJ *ARVICOLA TERRESTRIS* (L. 1758) V OBLASTI ZAHORSKEJ NIZINY. [A SURVEY OF THE HABITAT AND DISTRIBUTION OF THE WATER VOLE *ARVICOLA TERRESTRIS* (L. 1758) IN ZAHORE (A WEST SLOVAKIAN REGION).] *Biologia* (Bratislava) 22(5): 375-380. 1967. [From Biol. Abstr. 49(8), 1968. In Slovak with Russian and English summ.] *WR 135: 21*
[Univ. Komenskeho, Bratislava, Czechoslovakia.]

Kozlov, N. P. [TYPICAL FEATURES OF THE ECOLOGY OF MEADOW MOUSE *(LAGURUS)* IN NORTH KAZAKHSTAN (USSR).] *Sel'skokhoz. Biol.* 2(1): 141-144. 1967. [From Biol. Abstr. 49(9), 1968. In Russian with English summ.] *WR 135: 21*

Kulik, I. L. [A CONTRIBUTION TO THE ECOLOGY OF THE WATER VOLE *(ARVICOLA TERRESTRIS)* IN FLOOD PLAINS OF NORTHERN RIVERS.] *Zool. Zhur.* 47(6): 954-958. June 1968. [From J. Mammal. 50(2), 1969. In Russian with English summ.] *WR 135: 21*

Kydyraliev, A. [EXPERIENCE IN STUDYING MURINE RODENTS OF A SPRUCE FOREST IN THE TERSKEI ALA-TOO RANGE AT A FIXED STATION.] In: *(Harmful rodents of Kirgiziya.) Ilim* (Frunze). p. 37-50. 1966. [From Biol. Abstr. 49(6), 1968, from Referat. Zhur., Biol., 1966, no. 12I551. Transl. of Russian abstr.] *WR 135: 21*

Larsen, Tor M. OBSERVASJONER AV SMAGNAGERE I VERRAN KOMMUNE, NORD-TRONDELAG, 1966. [OBSERVATIONS OF SMALL RODENTS IN VERRAN, NORTH-TRONGELAG, (NORWAY) 1966.] *Fauna* (Oslo) 20(1): 29-31. 1967. [From Biol. Abstr. 49(19), 1968. In Norwegian.] *WR 135: 21*

Lee, M. Raymond, and Earl G. Zimmerman. ROBERTSONIAN POLYMORPHISM IN THE COTTON RAT, *SIGMODON FULVIVENTER*. *J. Mammal.* 50(2): 333-339, 3 figs. June 1969. *WR 135: 21*
[Univ. Ill., Urbana.]

Leontyeva, M. N. [PECULIARITIES OF THE GROUND MOISTENING OF HABITATS OF THE GREAT GERBIL *(RHOMBOMYS OPIMUS* LICHT.*).*] *Zool. Zhur.* 47(8): 1223-1232. Aug. 1968. [From J. Mammal. 50(2), 1969. In Russian with English summ.] *WR 135: 21*

Likhachev, G. N. [POPULATION STRUCTURE OF THE COMMON DORMOUSE *MUSCARDINUS AVELLANARIUS.*] *Bull. Moscow Obshch. Ispit. Prirody (Biol.)* 71(5): 18-29. 1966. [From Biol. Abstr. 49(3), 1968. In Russian with English summ.] *WR 135: 21*

Lobachev, V. S. [PECULIARITIES OF THE UTILIZATION OF BURROW COLONIES BY GERBILS.] *Bull. Moscow Obshch. Ispit. Prirody (Biol.)* 72(1): 21-28, illus. 1967. [From Biol. Abstr. 49(4), 1968. In Russian with English summ.] *WR 135: 21*

Martinet, Lise. DETERMINATION DE L'AGE CHEZ LE CAMPAGNOL DES CHAMPS *(MICROTUS ARVALIS* PALLAS*)* PAR LA PESEE DU CRITALLIN. [DETERMINATION OF THE AGE OF THE FIELD MOUSE *(MICROTUS ARVALIS* PALLAS*)* BY THE WEIGHT OF THE CRYSTALLINE LENS.] *Mammalia* 30(3): 425-430. 1966. [From Biol. Abstr. 49(8), 1968. In French with English summ.] *WR 135: 22*
[Inst. Natl. Recherche Agronomique, Jouy-en-Josas (S.-et-O.), France.]

Miller, Donald H., and Lowell L. Getz. BOTFLY INFECTIONS IN A POPULATION OF *PEROMYSCUS LEUCOPUS*. *J. Mammal.* 50(2): 277-283, 2 figs. June 1969. *WR 135: 22*
[Lyndon State Coll., Lyndonville, Vt.] Abstract: Host-parasite relationships between the botfly, *Cuterebra* sp., and a population of the white-footed mouse, *Peromyscus leucopus*, were observed in central Connecticut from 1963 to 1967. Infection was restricted to a period from July to September; percentages of infection varied from 7.8 to 73.7. There was no correlation between density of the mice and percentage of botfly infections. Infected mice (both single and multiple infections) had a lower survival rate than did uninfected individuals. Mice living in a swamp had significantly fewer infections than those in the upland. If botfly infections exert a significant influence on white-footed mouse populations, such influence apparently is not density dependent.

Morris, Ralph D. COMPETITIVE EXCLUSION BETWEEN *MICROTUS* AND *CLETHRIONOMYS* IN THE ASPEN PARKLAND OF SASKATCHEWAN. *J. Mammal.* 50(2): 291-301, 4 figs. June 1969. *WR 135: 22*
[Univ. Saskatchewan, Saskatoon, Saskatchewan, Canada.] Abstract: Habitat preferences of *Microtus pennsylvanicus* and *Clethrionomys gapperi* were noted in the aspen parkland near Saskatoon, Saskatchewan (52°10'N, 106°41'W). An almost complete habitat separation was observed between the two species. In summer, in an area where both species occurred in numbers, resident *Clethrionomys* were confined to an aspen stand, whereas resident *Microtus* were in adjacent grassland. Where *Clethrionomys* were absent, resident *Microtus* favored habitat normally used by *Clethrionomys*. Late autumn trapping suggests that in winter the two species coexist in the same aspen stand where there is a protective cover of snow. The data suggest competitive exclusion of *Microtus* by *Clethrionomys* from aspen habitat during the summer. The possibility of a beachhead phenomenon and the exclusion of *Clethrionomys* by *Microtus* from certain habitats is considered.

Murray, William T. THE EFFECTS OF HARDWOOD REMOVAL ON SMALL RODENT POPULATIONS. *M.S. thesis, Stephen F. Austin State Coll.* 48 p. 1969. *WR 135: 22*
Courtesy/ Edwin D. Michael.

Mysterud, Ivar. FORPLANTNING HOS SKOGLEMEN I VINTERHALVARET. [WINTER BREEDING IN THE WOOD LEMMING *(MYOPUS SCHISTICOLOR)* IN NORWAY.] *Fauna* (Oslo) 19(2): 79-83, illus. 1966. [From Biol. Abstr. 49(23), 1968. In Norwegian with English summ.] *WR 135: 22*
[Univ. Oslo, Oslo, Norway.]

Natskii, K. V. [ECTOPARASITES OF RODENTS IN FOCI OF HEMORRHAGIC NEPHROSONEPHRITIS IN THE USSR MARITIME PROVINCE.] *Sbornik Trudov Vladivostok. Nauch.-Issled. Epidemiol. Mikrobiol. Gig.* 3: 43-45. 1965. [From Biol. Abstr. 49(1), 1968, from Referat. Zhur., Biol., 1967, no. 1K292. Transl. of Russian abstr.] *WR 135: 22*

Noramirya, A. V., Yu. M. Elkin, G. G. Davtyan, E. L. Ananyan, and E. V. Yundin. [COMPARATIVE SENSITIVITY AND THE NATURE OF BACTEREMIA IN HIGH MOUNTAIN COMMON VOLES *(MICROTUS ARVALIS)* WHEN THEY ARE INFECTED BY DIFFERENT STRAINS OF THE PLAGUE PATHOGEN.] *Zhur. Eksp. Klin. Med.* 6(6): 69-76. 1966. [From Biol. Abstr. 49(7), 1968. In Russian.] *WR 135: 22*

Pokrovski, A. V., and V. N. Bolshakov. [EXPERIMENTAL STUDIES OF SEASONAL VARIATIONS IN WEIGHT, GROWTH AND DEVELOPMENT OF MOUNTAIN VOLES *(ALTICOLA, CLETHRIONOMYS).*] *Acta Theriol.* 14(2): 11-19, 3 figs. 5 Apr. 1969. In Russian with Polish and English summ. *WR 135: 23*
[Inst. Ecol. Plants & Animals, Sverdlovsk, USSR.] Seasonal changes can be defined only on the basis of summarized material. Young voles exhibit hardly any seasonal changes in rate of growth.--From abstr.

Pop, G. J. [POPULATION-DYNAMICS AND CONTROL OF THE FIELD-VOLE.] *Rat & Muis* (Wageningen) 16(1): 3-10. July 1968. [From J. Mammal. 50(2), 1969. In Dutch.] *WR 135: 23*

Popov, A. V., V. P. Nikitin, D. P. Voitsekhovskii, and N. I. Vologin. [GRAIN BAIT WITH ZINC PHOSPHIDE TO CONTROL THE AFGHAN VOLE *(MICROTUS (BLANFORDIMYS) AFGANUS* THOMAS).] *Izvest. Akad. Nauk Turkm. SSR Ser. Biol. Nauk* 2: 62-68. 1966. [From Biol. Abstr. 49(5), 1968. In Russian.] *WR 135: 23*

Radda, A. [STUDIES ON POPULATION OF THE BANK VOLE *(CLETHRIONOMYS GLAREOLUS* SCHREBER, 1780*)* BY MARK AND RELEASE TRAPPING IN LOWER AUSTRIA.] *Oecologia* 1(3): 219-235. 28 June 1968. [From J. Mammal. 50(2), 1969. In German with English summ.] *WR 135: 23*

Rahm, Urs H. GESTATION PERIOD AND LITTER SIZE OF THE MOLE RAT, *TACHYORYCTES RUANDAE. J. Mammal.* 50(2): 383-384. June 1969. *WR 135: 23*
[Inst. Recherche Sci. Afrique Centrale, Bukavu, Democratic Republic of the Congo.]

Rausch, R. L., and V. R. Rausch. STUDIES ON THE HELMINTH FAUNA OF ALASKA. XLVII. *SOBOLEVINGYLUS MICROTI* SP. NOV. (NEMATODA: PSEUDALIIDAE), A LUNGWORM OF RODENTS. *Canadian J. Zool.* 47(3): 443-447, 6 figs. May 1969. *WR 135: 23*
[Arctic Health Res. Center, College, Alaska.] Occurs in the pulmonary tissue of the northern vole *(Microtus oeconomus)* and other rodents in east-central Alaska.--From abstr.

Richmond, M., and C. H. Conaway. INDUCED OVULATION AND OESTRUS IN *MICROTUS OCHROGASTER. J. Reproduction & Fertility,* Suppl. 6. p. 357-376, 2 figs. 1969. *WR 135: 23*
[Univ. Mo., Columbia.] Ovulation may be induced by direct contact between male and female (83% effective), by proximity of male to female (71%), or by creating a stressful situation (changing litter or moving to another social situation).

Saint Girons, M.-C. ÉTUDE DU GENRE *APODEMUS* KAUP, 1829 EN FRANCE (SUITE ET FIN). [STUDY OF THE GENUS *APODEMUS* IN FRANCE (CONTINUATION AND CONCLUSION).] *Mammalia* 31(1): 55-100. 1967. [From Biol. Abstr. 49(6), 1968. In French with English summ.] *WR 135: 23*
[Mus. Hist. Natl., Brunoy, France.]

Semizorova, I. [CONTROL OF RODENTS WITH ARTIFICIAL INFECTION OF THEM BY PATHOGENIC BACTERIA.] *Lesnicka Prace* 24(8): 361-362. Aug. 1968. [From Bibliog. Agr. 33(4), 1969. In Czech.] *WR 135: 23*

Shchepot'ev, N. V. [METHODS OF ESTIMATING THE ABUNDANCE OF THE NORTHERN THREE-TOED JERBOA.] *Zool. Zhur.* 46(5): 787-788. 1967. [From Biol. Abstr. 49(9), 1968. In Russian with English summ.] *WR 135: 23*
"Dipus sagitta."

Shkolnik, Amiram, and Arieh Borut. TEMPERATURE AND WATER RELATIONS IN TWO SPECIES OF SPINY MICE *(ACOMYS). J. Mammal.* 50(2): 245-255, 6 figs. June 1969. *WR 135: 23*
[Hebrew Univ., Jerusalem, Israel.] *"Acomys russatus* and *A. cahirinus."*

Smith, Michael H., and Ronald W. Blessing. TRAP RESPONSE AND FOOD AVAILABILITY. *J. Mammal.* 50(2): 368-369, 1 fig. June 1969. *WR 135: 24*
[Savannah River Ecol. Lab., Box A, Aiken, S.C.] "In *Peromyscus polionotus.*"

Smith, Michael H., Ronald W. Blessing, James L. Carmon, and John B. Gentry. COAT COLOR AND SURVIVAL OF DISPLACED WILD AND LABORATORY REARED OLD-FIELD MICE. *Acta Theriol.* 14(1): 1-9, 4 figs. 5 Apr. 1969. In English with Polish summ. *WR 135: 24*
[Savannah River Ecol. Lab., Box A, Aiken, S.C.] Laboratory mice disappeared much faster than the wild mice, but the lighter mice did not disappear at a higher rate than the dark form.--From abstr.

Speth, R. Lynn. PATTERNS AND SEQUENCES OF MOLTS IN THE GREAT BASIN POCKET MOUSE, *PEROGNATHUS PARVUS.* *J. Mammal.* 50(2): 284-290, 2 figs. June 1969. *WR 135: 24*
[Southern Conn. State Coll., New Haven.]

Srivastava, A. S., B. P. Gupta, G. P. Awasthi, R. S. Tripathi, and R. K. Pandey. SURVEY OF FIELD RATS AND PATTERN OF THE RAT BURROWS. *Labdev J. Sci. Technol.* 5(4): 329-330. 1967. [From Biol. Abstr. 49(17), 1968.] *WR 135: 24*
[Lab. Entomol. Govt. Uttar Pradesh, Kanpur, India.] *"Bandicota bengalensis bengalensis* and others."

Steiner, Hans M. UNTERSUCHUNGEN ÜBER DIE VARIABILITÄT UND BIONOMIE DER GATTUNG *APODEMUS* (MURIDAE, MAMMALIA) DER DONAU-AUEN VON STOCKERAU (NIEDERÖSTERREICH). [INVESTIGATIONS ON VARIABILITY AND BIONOMY OF THE GENUS *APODEMUS* (MURIDAE, MAMMALIA) IN THE MEADOWS ALONG THE DANUBE AT STOCKERAU, LOWER AUSTRIA.] *Z. Wiss. Zool.* 177(1/2): 1-96, illus. 1968. [From Biol. Abstr. 49(18), 1968. In German.] *WR 135: 24*
[Inst. Exptl. Zool., Vienna, Austria.]

Terman, C. Richard. PREGNANCY FAILURE IN FEMALE PRAIRIE DEERMICE RELATED TO PARITY AND SOCIAL ENVIRONMENT. *Animal Behaviour* 17(1): 104-108, 2 figs. Feb. 1969. *WR 135: 24*
[Coll. William & Mary, Williamsburg, Va.] Confined laboratory populations. An increasingly higher percentage of pregnancy occurred in the following treatment order: female plus strange male (63%), female plus stud and strange male, female alone, and female plus stud male (97%).

Terman, C. Richard. WEIGHTS OF SELECTED ORGANS OF DEER MICE *(PEROMYSCUS MANICULATUS BAIRDII)* FROM ASYMPTOTIC LABORATORY POPULATIONS. *J. Mammal.* 50(2): 311-320. June 1969. *WR 135: 24*
[Coll. William & Mary, Williamsburg, Va.]

Tumanov, I. L. [EFFECT OF RATINDANE ON THE CARDIAC ACTIVITY AND RESPIRATION OF SOME MURINE RODENTS.] *Zap. Leningrad. Sel'skokhoz. Inst.* 95: 178-183. 1965. [From Biol. Abstr. 49(1), 1969, from Referat. Zhur., Biol., 1966, no. 21613. Transl. of Russian abstr.] *WR 135: 24*
Bank voles, field voles, yellow-throated mice, and field mice.

Umrikhina, G. S. [THE PROMISE OF SOME METHODS OF CONTROLLING MURINE RODENTS IN KIRGIZIYA.] In: *(Harmful rodents of Kirgiziya.) Ilim* (Frunze). p. 117-127. 1966. [From Biol. Abstr. 49(5), 1968, from Referat. Zhur., Biol., 1966, no. 12I600. Transl. of Russian abstr.] *WR 135: 24*

Zejda, Jan. MORTALITY OF A POPULATION OF *CLETHRIONOMYS GLAREOLUS* SCHREB. IN A BOTTOMLAND FOREST IN 1964. *Zool. Listy* 16(3): 221-228, illus. 1967. [From Biol. Abstr. 49(10), 1968.] *WR 135: 24*
[Inst. Vertebrate Zool., Czechoslovak Acad. Sci., Brno, Czechoslovakia.]

Zejda, Jan. A STUDY ON EMBRYOS AND NEWBORNS OF *CLETHRIONOMYS GLAREOLUS* SCHREB. *Zool. Listy* 17(2): 115-126. 1968. [From Biol. Abstr. 49(24), 1968.] *WR 135: 25*
[Inst. Vertebrate Zool., Czechoslovak Acad. Sci., Brno, Czechoslovakia.]

RATTUS & MUS

Barnett, S. A., and R. C. Stoddart. EFFECTS OF BREEDING IN CAPTIVITY ON CONFLICT AMONG WILD RATS. *J. Mammal.* 50(2): 321-325, 2 figs. June 1969. *WR 135: 25*
[Univ. Glasgow, Scotland.] Abstract: Ten male wild rats *(Rattus norvegicus)* trapped as adults were kept singly and exposed daily for 15 minutes to a strange adult male of the same species. Seven adult males of the sixth through ninth generations reared in the laboratory were similarly exposed. In contrast with the trapped rats, the laboratory-bred males attacked and "threatened" the strangers little and their propensity to attack was not increased by the presence of females. Certain other activities were rare among trapped residents but common among residents bred in captivity: these were resident grooming interloper, resident crawling under and huddling with interloper, and resident mounting interloper as though the interloper were a female. Interlopers ran from, and squealed at, trapped residents more than they did in response to laboratory-bred residents.

Beneley, E. W. THE CONTROL OF RODENTS *(RATTUS NORVEGICUS). World Health Organ. Chron.* 21(9): 363-368, illus. 1967. [From Biol. Abstr. 49(3), 1968.] *WR 135: 25*

Greaves, J. H., and F. P. Rowe. RESPONSES OF CONFINED RODENT POPULATIONS TO AN ULTRASOUND GENERATOR. *J. Wildl. Mgmt.* 33(2): 409-417, 2 figs. Apr. 1969. *WR 135: 25*
[Infestation Control Lab., Tolworth, Surrey, England.] The responses of a confined colony of wild rats *(Rattus norvegicus)* and one of wild house mice *(Mus musculus)* to a unit generating pulsed ultrasound were studied over periods of 76 and 81 days, respectively. After various experimental conditions, most of the rodents continued to show some aversion to the sonic field. It is concluded that strategically placed units of the type used in this laboratory study may prevent or reduce invasion of premises with few entry points. In infested premises, it is also possible that such units could be used to divert rodents from their normal food to poisoned baits. Field trials are required to elucidate these points.--From abstr.

Kchouk, M., E. Edlinger, and A. Zaibi. SENSIBILITÉ DE *RATTUS NORVEGICUS* À LA WARFARINE. [SENSITIVITY OF *RATTUS NORVEGICUS* TO WARFARIN.] *Arch. Inst. Pasteur Tunis* 43(3): 523-529. 1966. [From Biol. Abstr. 49(6), 1968. In French.] *WR 135: 25*
[Inst. Pasteur, Tunis, Tunisia.]

Schwarz, E., and H. K. Schwarz. A MONOGRAPH OF THE *RATTUS RATTUS* GROUP. *An. Esc. Nac. Cienc. Biol. Mexico* 14(1/4): 79-178, illus. 1967. [From Biol. Abstr. 49(10), 1968. In English with Spanish summ.] *WR 135: 25*
[107 Gladwyn Court, Bethesda, Md.]

Smith, R. W. A NEW METHOD OF RAT CONTROL IN COCONUTS. *Trop. Agr.* 44(4): 315-324, illus. 1967. [From Biol. Abstr. 49(15), 1968.] *WR 135: 25*
[Coconut Ind. Board, Jamaica, West Indies.]

Wodzicki, Kazimierz. THE TOKELAU RAT SURVEY 2. FOLLOW-UP REPORT / 18 APRIL - 15 JUNE, 1968. *Prepared for the Tokelau Islands Administration in association with the Departments of Maori and Island Affairs and Scientific and Industrial Research* (Wellington). i + 35 p., 3 figs. + 6-page appendix. Oct. 1968. *WR 135: 26*

[DSIR, Lower Hutt, New Zealand.] *Rattus exulans* is the only rodent present in the Tokelau Islands. Rat damage to coconuts is local, occurring on some islands but not on others. Zinc phosphide appears to be suitable for control in coconut groves, and certain anticoagulants with or without snap-traps are recommended for villages.--From concl. [See WR 132: 17 for earlier report.]

SCIURIDS

Anteson, Reginald Kwaku. BIOLOGICAL STUDIES OF *MONANEMA MARMOTAE* (WEBSTER 1967) A FILARIOID PARASITE OF THE WOODCHUCK *MARMOTA MONAX CANADENSIS*. *Ph.D. thesis, Univ. Conn.* 93 p. 1968. [From Dissertation Abstr. 29(9B), 1969.] *WR 135: 26*

The vector, *Ixodes cookei*, was found in nature to contain the infective larvae of the parasite. This tick is the ectoparasite found most often associated with the woodchuck host in the spring; it therefore appears likely that it transmits the filarioids to its host during this time.

Davis, Stanley David. THE EFFECT OF HIBERNATION UPON INTESTINAL PROTOZOA OF GROUND SQUIRRELS. *Ph.D. thesis, Univ. Calif.* (Davis). 40 p. 1968. [From Dissertation Abstr. 29(11B), 1969.] *WR 135: 26*

Entamoeba citelli survives winter as an infectious cyst outside its hibernating host. Reinfection occurs in the spring when hibernation is over.

Delost, P. LE CYCLE SEXUEL SAISONNIER DE L'ECUREUIL *(SCIURUS VULGARIS)*. [THE SEASONAL SEXUAL CYCLE OF SQUIRREL *(SCIURUS VULGARIS)*.] *C. R. Seances Soc. Biol. Paris* 159(5): 1141-1145. 1965. [From Biol. Abstr. 49(24), 1968. In French.] *WR 135: 26*

[Fac. Sci., Clermont-Ferrand, Paris, France.]

Finley, Robert B., Jr. CONE CACHES AND MIDDENS OF *TAMIASCIURUS* IN THE ROCKY MOUNTAIN REGION. *Univ. Kans. Mus. Nat. Hist. Misc. Publ.* no. 51. p. 233-273, 6 figs. 11 July 1969. *WR 135: 26*

[US F&WS, Denver, Colo.] A single male *Tamiasciurus* may require from 8 to 24 bushels of cones to meet energy requirements for half a year. The squirrels may be capable of harvesting an entire cone crop, at least in poor or moderate seed years. Seed caches are good sources of conifer seeds for reforestation projects and artificial seedings.--From summ.

Girenko, L. L. [BIOLOGICAL SIGNIFICANCE OF THE COLORATION OF *CITELLUS SUSLICUS* GULD.] *Vestnik Zool.* 1(6): 73-76. Nov.-Dec. 1967. [From J. Mammal. 50(2), 1969. In Russian.] *WR 135: 26*

[Inst. Zool., Acad. Sci. Ukrainian SSR, Kiev, USSR.]

Hammel, H. T., T. J. Dawson, R. M. Abrams, and H. T. Andersen. TOTAL CALORIMETRIC MEASUREMENTS ON *CITELLUS LATERALIS* IN HIBERNATION. *Physiol. Zool.* 41(3): 341-357. July 1968. [From J. Mammal. 50(2), 1969.] *WR 135: 26*

Nixon, Charles M., and Milford W. McClain. SQUIRREL POPULATION DECLINE FOLLOWING A LATE SPRING FROST. *J. Wildl. Mgmt.* 33(2): 353-357. Apr. 1969. *WR 135: 26*

[Ohio Div. Wildl., New Marshfield.] Abstract: The squirrel *(Sciurus carolinensis* and *S. niger)* population on the Waterloo Experiment Station located in southeast Ohio had increased to a density of nearly 1.3 squirrels/acre in 1966 when a severe spring frost reduced available food stocks. By fall, 1966, the population exhibited a lowered reproductive rate, lighter body weights, and

increased dispersal and/or mortality, particularly the subadult squirrels. Breeding virtually ceased between May, 1966 and August, 1967. The impact of the frost on reducing available food stocks at a time of high population density may have increased social stress to the point of inhibiting normal reproduction, at least in summer, 1966. Breeding did resume in late summer, 1967, but the population in the fall of 1967 was only one-sixth as large as in the fall of 1966.

Olexik, William A., Alfred E. Perry, and Walter E. Wilhelm. ECTOPARASITES AND HELMINTH ENDOPARASITES OF THE TREE SQUIRRELS OF SOUTHWEST TENNESSEE. *Rept. Reelfoot Lake Biol. Sta.* 33: 4-6. Jan. 1969. *WR 135: 27*
[Memphis State Univ., Memphis, Tenn.] Sites of infection, numbers of parasites recovered, and sex ratios of nematode parasites are reported.--From abstr.

Petrova, A. A. [TWO ANNUAL LITTERS OF *SPERMOPHILOPSIS LEPTODACTYLUS* IN KARSHI STEPPE.] *Zool. Zhur.* 45(12): 1887-1889. 1966. [From Biol. Abstr. 49(10), 1968. In Russian with English summ.] *WR 135: 27*
[Inst. Zool. Parasitol., Acad. Sci. Uzbek SSR, Tashkent, USSR.]

Ruzic, A. CONTRIBUTION A L'ÉCOLOGIE DE *SPERMOPHILOPSIS LEPTODACTYLUS* LICHT. DANS LE DESERT AU SUD DE BUCHARA. [CONTRIBUTION TO THE ECOLOGY OF *SPERMOPHILOPSIS LEPTODACTYLUS* LICHT. IN THE DESERT IN THE SOUTH OF BUCHARA (CENTRAL ASIA).] *Mammalia* 31(2): 173-185. 1967. [From Biol. Abstr. 49(11), 1968. In French with English summ.] *WR 135: 27*
[Inst. Protect. Plantes, Belgrade, Yugoslavia.]

Sheppard, David H. A COMPARISON OF REPRODUCTION IN TWO CHIPMUNK SPECIES *(EUTAMIAS). Canadian J. Zool.* 47(4): 603-608. July 1969. *WR 135: 27*
[Univ. Saskatchewan, Regina, Saskatchewan, Canada.]

Soon, Bee-Ling, and R. S. Dorney. OCCURRENCE OF *EIMERIA TAMIASCIURI* IN ONTARIO RED SQUIRRELS *(TAMIASCIURUS HUDSONICUS). Canadian J. Zool.* 47(4): 731-732. July 1969. *WR 135: 27*
[Univ. Waterloo, Waterloo, Ontario, Canada.] Abstract: *E. tamiasciuri* is reported for the first time from Ontario (92.3% of 13 red squirrels). It resembles closely in size oocysts described from Wisconsin but is considerably smaller than those from Arizona. This extends the range of this parasite into central Canada.

Tittensor, A. M. POPULATION SIZE AND DISPERSION OF RED SQUIRRELS IN PINE FOREST. *Bull. Mammal Soc.* (London) 30: 2-3. Sept. 1968. [From J. Mammal. 50 (2), 1969.] *WR 135: 27*

Wadsworth, Carl E. REPRODUCTION AND GROWTH OF *EUTAMIAS QUADRIVITTATUS* IN SOUTHEASTERN UTAH. *J. Mammal.* 50(2): 256-261, 1 fig. June 1969. *WR 135: 27*
[Brigham Young Univ., Provo, Utah.]

Wunder, Bruce Arnold. THERMOREGULATION AND THE ENERGETICS OF RUNNING ACTIVITY IN MERRIAM'S CHIPMUNK, *EUTAMIAS MERRIAMI. Ph.D. thesis, Univ. Calif.* (Los Angeles). 107 p. 1968. [From Dissertation Abstr. 29(9B), 1969.]
WR 135: 27
The chipmunks drink water equal to ca. 12% of their body weight/day but can reduce this to 1.5%. While on water restriction their weight fell 23%. Body temperature remained unchanged.

BEAVER

Aleksiuk, Michael, and Ian McTaggart Cowan. ASPECTS OF SEASONAL ENERGY EXPENDITURE IN THE BEAVER *(CASTOR CANADENSIS* KUHL) AT THE NORTHERN LIMIT OF ITS DISTRIBUTION. *Canadian J. Zool.* 47(4): 471-481, 8 figs. July 1969. *WR 135: 28*
[Univ. Manitoba, Winnipeg, Manitoba, Canada.] Abstract: The beaver *(Castor canadensis* Kuhl) is subjected to a seasonally fluctuating energy regime in the northern portion of its distribution. During the summer the animal has free access to an abundant food supply in the form of growing plant material, while the winter food supply is limited to a store of cached saplings. The summer and winter periods are 4 and 8 months long respectively. In the Mackenzie Delta, Northwest Territories, growth was found to be rapid in the summer and absent in the winter. A winter weight loss characterized immature animals. Fat was deposited in the autumn, maintained during the winter, and mobilized in the spring. Animals were lean during the summer. Thyroid gland weights were high in the summer and low in the winter. It was concluded from these data that metabolic energy expenditure is high during the summer and low during the winter. This annual pattern is an inherent property of northern beavers. The adaptive significance of the pattern is believed to be that energy expenditure is attuned to environmental energy availability.

Aune, Ola Arne. BEVER I TROMS OG FINNMARK OKOLOGI OG BESTAND. [BEAVER *(CASTOR FIBER* L.) IN TROMS AND FINNMARK (NORTH-NORWAY): ECOLOGY AND STOCK.] *Fauna* (Oslo) 20(3): 150-167, illus. 1967. [From Biol. Abstr. 49(13), 1968. In Norwegian with English summ.] *WR 135: 28*
[Trondheim Mus., Trondheim, Norway.]

Myrberget, S. [THE BEAVER AND NATURE PROTECTION.] *Norsk Nat.* 4(2): 42-46. May 1968. [From Bibliog. Agr. 33(4), 1969. In Norwegian.] *WR 135: 28*

Pedersen, Jorgen A. BEVER I ORKDAL, SOR-TRONDELAG. [BEAVER IN ORKDAL, SOR-TRONDELAG COUNTY (NORWAY).] *Fauna* (Oslo) 20(2): 109-110, illus. 1967. [From Biol. Abstr. 49(13), 1968. In Norwegian with English summ.] *WR 135: 28*

Sysoev, N. D. [RESULTS OF REACCLIMATIZATION AND PERSPECTIVES OF TRAPPING OF THE EUROPEAN BEAVER *(CASTOR FIBER)* IN THE VLADIMIR DISTRICT.] *Zool. Zhur.* 46(5): 785-787. 1967. [From Biol. Abstr. 49(9), 1968. In Russian with English summ.] *WR 135: 28*

MUSKRAT & NUTRIA

Nasimovich, A. A. [ECOLOGICAL SEQUENCES OF INTRODUCTION OF A NEW SPECIES INTO LAND BIOCOENOSES *(ONDATRA* IN EURASIA).] *Zool. Zhur.* 45(11): 1593-1599. 1966. [From Biol. Abstr. 49(4), 1968. In Russian with English summ.] *WR 135: 28*
[Inst. Geogr., Acad. Sci. USSR, Moscow, USSR.]

Newson, R. M. POPULATION DYNAMICS OF THE COYPU. *Bull. Mammal Soc.* (London) 30: 40. Sept. 1968. [From J. Mammal. 50(2), 1969.] *WR 135: 28*

Roscher, John P. ALGA DISPERSAL BY MUSKRAT INTESTINAL CONTENTS *(ONDATRA ZIBETHICA). Trans. Am. Microscop. Soc.* 86(4): 497-498, illus. 1967. [From Biol. Abstr. 49(9), 1968.] *WR 135: 28*

FUR ANIMALS, GENERAL

Andersen, A. [PARASITES OF FUR ANIMALS, TREATMENT AND DANGER OF POISONING THROUGH THE USE OF DDT AND LINDANE PREPARATIONS FOR MINK.] *Norsk Pelsdyrbl.* 42 (11): 377-381. 5 June 1968. [From Bibliog. Agr. 33(4), 1969. In Norwegian.] *WR 135: 28*

BEARS

Craighead, John J., Maurice G. Hornocker, and Frank C. Craighead, Jr. REPRODUCTIVE BIOLOGY OF YOUNG FEMALE GRIZZLY BEARS. *J. Reproduction & Fertility*, Suppl. 6. p. 447-475, 3 figs. + 1 pl. 1969. *WR 135: 29*
[Univ. Mont., Missoula.] Female grizzlies do not attain sexual maturity until 4.5 years. Young females may breed in alternate years or with a 2-year interval. Precopulatory and copulatory behavior were observed.--From summ.

Erickson, Albert W., Harland W. Mossman, Richard J. Hensel, and Willard A. Troyer. THE BREEDING BIOLOGY OF THE MALE BROWN BEAR *(URSUS ARCTOS)*. *Zoologica* 53(3): 85-105 + 9 pls. 29 Nov. 1968. [From J. Mammal. 50(2), 1969.] *WR 135: 29*

Hensel, Richard J., Willard A. Troyer, and Albert W. Erickson. REPRODUCTION IN THE FEMALE BROWN BEAR. *J. Wildl. Mgmt.* 33(2): 357-365, 2 figs. Apr. 1969. *WR 135: 29*
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[Swedish Mus. Nat. Hist., Stockholm, Sweden.] In areas where small rodents constitute the staple food, hares are eaten more frequently in spring-early summer by small cubs than by large cubs or adults. During early summer, insects were eaten more often by older cubs than by younger ones. In late summer, fruits and berries were eaten rather often and to the same extent by cubs and adults. Birds occurred in about 50% of the cub stomachs in all the areas investigated.--From summ.

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Lemmings were found to be the major prey animals of arctic foxes. Fewer whelps survived in years when lemmings were scarce. Fighting among whelps is believed important in the reduction of litters. Survival of whelps in the first half year, rather than the number of litters produced in a given year, appeared to be the governing variable in population fluctuations. Life table analysis suggests over half of a theoretical cohort (year-class) dies before weaning, and half the remainder in the next year. Less than 10% of the cohort survives to the age of two. Striking features of arctic fox breeding biology may be viewed as adaptations to the high latitude climatic regime and to dependence on an undiversified and fluctuating food base.--From abstr.

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[Forestry Res. Inst., Warsaw, Poland.]

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[Texas Parks & Wildl. Dept., Artesia Wells.] Abstract: Sixty-six marked collared peccary *(Pecari tajacu)* were observed on two study areas in southern Texas to determine mobility and home range. Peccary were individually marked with color-coded plastic ear tags, and collars equipped with bells were placed on adults. Animals were located with the aid of bells and herd movements were plotted on aerial photomaps. The average size of home range on one area was 311 acres while on the other site it was 548 acres. Computation of home-range size involved 1,333 sightings of marked animals.

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Karns, Patrick D., and Peter A. Jordan. *PNEUMOSTRONGYLUS TENUIS* IN MOOSE ON A DEER-FREE ISLAND. *J. Wildl. Mgmt.* 33(2): 431-433. Apr. 1969. *WR 135: 34*
[Carlos Avery Res. Center, Forest Lake, Minn.] Abstract: Analysis of fresh moose *(Alces alces)* feces from Isle Royale, Michigan, a deer-free island in Lake Superior, and northeastern Minnesota, an area with a low white-tailed deer *(Odocoileus virginianus)* population, revealed incidences of 0.8 and 0.6% respectively of the first-stage larva of *Pneumostrongylus tenuis*, the etiological agent of cerebrospinal nematodiasis in moose. The report of this parasite is from an area that has been deer-free for 30 years.

Karstad, L. DISEASES OF THE CERVIDAE: BIBLIOGRAPHY SUPPLEMENT I. *Wildl. Disease* no. 52. 114 p. on 2 microfiche. 23 June 1969. *WR 135: 34*
Abstract: A supplement to *Wildlife Diseases* no. 43. Lists 751 entries of published literature by subject and author with complete references. Some entries are annotated, particularly where title is not specific or clear. Covers mostly literature published 1964-1968 plus some of earlier date omitted from the previous compendium.

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[Kinkelstrabe 61, Zurich, Switzerland.] *"Adenota kob thomasi."*

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[Boda Viltforskningsstation, Enånger, Sweden.] Major topics of discussion include: characteristics, structure and changes of the female reproductive tract; breeding season; pregnancy; calving; ability and capacity of reproduction; ovulation rate as a measure of reproduction; factors connected with ovulation rate; ovulation rate in different regions and years; and reproductive rates and growth of moose populations.

Matyushkin, E. N. [SPREADING OF THE MANCHURIAN WAPITI *(CERVUS ELAPHUS CANTHOPYGUS)* TO THE MARITIME SLOPES OF THE NORTHERN SIKHOTE-ALIN.] *Zool. Zhur.* 46(5): 749-754. 1967. [From Biol. Abstr. 49(11), 1968. In Russian with English summ.] *WR 135: 35*

McEwan, E. H., and P. E. Whitehead. CHANGES IN THE BLOOD CONSTITUENTS OF REINDEER AND CARIBOU OCCURRING WITH AGE. *Canadian J. Zool.* 47(4): 557-562, 2 figs. July 1969. *WR 135: 35*
[Univ. British Columbia, Vancouver, British Columbia, Canada.] Abstract: Packed cell volume, hemoglobin, mean corpuscular hemoglobin concentration, reticulocytes, total leucocytes, and plasma protein concentration were measured each week throughout the year for six reindeer and six caribou. Red blood cells (RBC), packed cell volume (PCV), hemoglobin (Hb), and reticulocyte numbers were lower in the reindeer than caribou, whereas the leucocyte concentrations were higher. Activity and excitement, part of the aggressive behavior displayed by rutting caribou, resulted in an increase of PCV, Hb, and plasma protein levels by 21%, 18.5%, and 10%, respectively. In female caribou, about an 8% drop in these values occurred during estrus. From the fifth month of pregnancy to parturition, PCV, Hb, and plasma protein increased by 17%, 13.5%, and 11%, respectively

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Michurin, L. N. [REPRODUCTION OF WILD REINDEERS ON THE TAIMYR PENINSULA.] *Zool. Zhur.* 46(12): 1837-1841. 1967. [From Biol. Abstr. 49(24), 1968. In Russian with English summ.] *WR 135: 36*
[Res. Inst. Agr. Far North, Norilsk, USSR.]

Mohr, Erna. SPIELBEREITSCHAFT BEIM WISENT. [WILLINGNESS OF WISENTS TO PLAY.] *Z. Säugetierk.* 33(2): 116-121, illus. 1968. [From Biol. Abstr. 49(24), 1968. In German with English summ.] *WR 135: 36*

Müller-Using, D., and R. Schloeth. DAS VERHALTEN DER HIRSCHE (CERVIDAE). HANDBUCH DER ZOOLOGIE. 8. BAND. 43. LIEFERUNG. [THE BEHAVIOR OF DEER (CERVIDAE). HANDBOOK OF ZOOLOGY. VOL. 8. NO. 43.] *Walter de Gruyer & Co.* (Berlin). 60 p., illus. 1967. [From Biol. Abstr. 49(1), 1968. In German.] *WR 135: 36*

Nagy, Julius G., and Gary L. Williams. RUMINO RETICULAR VFA CONTENT OF PRONGHORN ANTELOPE. *J. Wildl. Mgmt.* 33(2): 437-439. Apr. 1969. *WR 135: 36*
[Colo. State Univ., Fort Collins.] Abstract: Molar concentrations and percentage distributions of short chain fatty acids obtained from various age-classes and sexes of pronghorn antelope *(Antilocapra americana)* were investigated. The concentrations of the acids and their percentage distribution seem to correspond to data obtained on domestic ruminants on somewhat comparable diets. Some statistically significant differences *($P < 0.05$)* were obtained on the percentage distribution of the acids of adults and fawns.

Nievergelt, Bernhard. DIE ZUSAMMENSETZUNG DER GRUPPEN BEIM ALPENSTEINBOCK. [THE COMPOSITION OF GROUPS IN THE SWISS IBEX FROM THE ALPS.] *Z. Säugetierk.* 32 (3): 129-144, illus. 1967. [From Biol. Abstr. 49(1), 1968. In German with English summ.] *WR 135: 36*
[Buren 52, Zurich, Switzerland.]

O'Gara, Bart. HORN CASTING BY FEMALE PRONGHORNS. *J. Mammal.* 50(2): 373-375, 1 fig. June 1969. *WR 135: 36*
[Mont. Coop. Wildl. Res. Unit, Missoula.]

Pfeffer, Pierre. CONSIDÉRATIONS SUR L'ÉCOLOGIE DES FORÊTS CLAIRES DU CAMBODGE ORIENTAL. [CONSIDERATIONS ON THE ECOLOGY OF THE OPEN FORESTS OF EASTERN CAMBODIA.] *Terre & Vie* 23(1): 3-24, 7 figs. Jan.-Mar. 1969. In French with English summ. *WR 135: 36*
Preliminary survey of the large mammal fauna of the open Dipterocarpus woodlands in eastern Cambodia. The discussion includes some reptiles and birds.--From summ.

Scotter, George Wilby. EFFECTS OF FOREST FIRES ON THE LICHEN WINTER RANGES OF BARREN-GROUND CARIBOU IN NORTHERN CANADA. *Ph.D. thesis, Utah State Univ.* 143 p. 1968. [From Dissertation Abstr. 29(7B), 1969.] *WR 135: 36*
In forests more than 120 years old, 722 caribou pellet groups per acre were found compared with only 18 per acre on the 1 to 10-year age class. There were 49 moose pellet groups per acre in the 11 to 30-year age class and only three per acre in forests more than 120 years old. Moose apparently preferred habitats in early stages of succession while barren-ground caribou favored those in later stages of succession.

Seliger, William G., James A. Erickson, and Richard N. Denney. HISTOLOGY AND ANATOMY OF THE WAPITI CANINE. *J. Mammal.* 50(2): 350-355, 3 figs. June 1969. *WR 135: 36*

Sinel'nikov, A. M. [SOME RESULTS FROM WORK ON INTRODUCTION OF THE BUKHARA DEER INTO THE RAMIT MOUNTAIN GAME PRESERVE.] *Izvest. Akad. Nauk Tadzh. SSR Otd. Biol. Nauk* 1(15): 74-91. 1964. [From Biol. Abstr. 49(2), 1968, from Referat. Zhur., Biol., 1965, no. 11227. Transl. of Russian abstr.] *WR 135: 37*

Skuncke, Folke. REINDEER ECOLOGY AND MANAGEMENT IN SWEDEN. *Biol. Pap. Univ. Alaska* no. 8. iv + 82 p., 8 figs. Feb. 1969. *WR 135: 37*
[Karl X Gustafs gata 62, Hälsingborg, Sweden.] Includes reindeer pastures and their grading, winter pasture supplies, normal utilization of winter pastures, and economics of reindeer husbandry.

Steen, Eliel. SOME ASPECTS OF THE NUTRITION OF SEMI-DOMESTIC REINDEER. *Symposia Zool. Soc. London* 21: 117-128. 1968. [From J. Mammal. 50(2), 1969.] *WR 135: 37*

Thomas, Donald C. POPULATION ESTIMATES AND DISTRIBUTION OF BARREN-GROUND CARIBOU IN MACKENZIE DISTRICT, N.W.T., SASKATCHEWAN, AND ALBERTA--MARCH TO MAY, 1967. *Canadian Wildl. Serv. Rept. Ser.*--no. 9. 44 p., 13 figs. 1969. In English with French and Russian summ. Price $1.00. *WR 135: 37*
Estimates of herd sizes for three of the populations were obtained from combinations of total counts, strip censuses, photographic counts, and a ratio method. A total population of 322,500 animals is estimated in the area censused. Aerial photographs were used to obtain the number of calves of the year in the major herds of caribou. Where adequate samples were obtained, the percentage of calves in the herds varied from 11.2 to 15.0. The over-all average recruitment rate for the three populations in the survey region was 11.0%. Caribou hunting is still a way of life for Eskimos and Indians in parts of northern Canada, but they no longer depend so heavily on the animal. It appears that there has been a substantial reduction of the harvest.--From abstr.

Timofeeva, E. K. [ELK BEHAVIOR ACCORDING TO OBSERVATIONS MADE IN THE NORTHEAST LENINGRAD REGION.] *Vestnik Leningrad. Univ. Ser. Biol.* 22(3): 74-82, illus. 1967. [From Biol. Abstr. 49(18), 1968. In Russian with English summ.] *WR 135: 37*

Vermont Department of Fish and Game. VERMONT'S 1967 BIG GAME SEASONS IN REVIEW. *Game Sec. Res. & Mgmt. Div., Vt. Dept. Fish & Game.* [ii] + 38 p., [5 figs.]. 1968. *WR 135: 37*
[151 Main St., Montpelier, Vt.] Results of bow, buck, antlerless, and bear seasons, reproductive analysis, and spring dead deer searches.

Wilson, Vivian J. ELAND, *TAUROTRAGUS ORYX*, IN EASTERN ZAMBIA. *Arnoldia* 4 (12): 1-9, 1 fig. 1 Feb. 1969. *WR 135: 37*
[Natl. Mus., Bulawayo, Rhodesia.] Observations of herd movements, breeding, food habits, and some weights and measurements of the animals.

Wolfe, Michael L. AGE DETERMINATION IN MOOSE FROM CEMENTAL LAYERS OF MOLAR TEETH. *J. Wildl. Mgmt.* 33(2): 428-431, 2 figs. Apr. 1969. *WR 135: 37*
[Purdue Univ., Lafayette, Ind.] Abstract: A method is described for age determination in moose *(Alces alces)* from growth layers in the cementum of molariform teeth. The technique was used to determine the ages of 140 moose over 1 year old from Isle Royale. The findings indicate that the method described provides a more reliable basis for age determination in the older age-groups than estimates of mandibular tooth wear. It also has a wide range of application because any molariform tooth may be used.

DEER (Odocoileus)

Barrett, James P., and William A. Guthrie. OPTIMUM PLOT SAMPLING IN ESTIMATING BROWSE. *J. Wildl. Mgmt.* 33(2): 399-403. Apr. 1969. *WR 135: 37*
[Univ. N.H., Durham.] Abstract: Optimum plot-sampling techniques in estimating winter browse weight were evaluated on a 0.484-acre tract. Considering

only 1-milacre square plots, a 1-man crew was superior to a 2-man crew; considering plots ranging from 1-9 milacres with a 2-man crew optimum plot size increased with increasing, hypothetical location time. Simple random sampling proved superior to double sampling with browse count as a concomitant observation.

Behrend, Donald F., and Earl F. Patric. INFLUENCE OF SITE DISTURBANCE AND REMOVAL OF SHADE ON REGENERATION OF DEER BROWSE. *J. Wildl. Mgmt.* 33(2): 394-398, 2 figs. Apr. 1969. *WR 135: 38*

[Huntington Wildl. Forest Sta., Newcomb, N.Y.] Abstract: The effects of burning, scarification, and partial removal of shade on deer-browse regeneration were studied in four hardwood and four mixed-growth stands in the Adirondack Mountains. Burning and scarification increased numbers of yellow birch *(Betula lutea)* seedlings in all mixed-growth stands from less than 10,000 per acre to 76,000 and 99,000 per acre, respectively. Identical treatments in northern hardwood stands had no consistent effect on numbers of sugar maple *(Acer saccharum)* seedlings. Burning resulted in the greatest variety of browse species including birches *(Betula spp.)*, aspens *(Populus spp.)*, willows *(Salix spp.)*, red elder *(Sambucus pubens)*, and eastern hemlock *(Tsuga canadensis)*. Growth of browse occurred only where either high or low shade had been removed, and where deer browsing pressure was reduced or eliminated. Observations from other study areas indicated that browse will develop well under deer densities approximating 14 per square mile, but will be repressed by densities of 27 per square mile. Thus, while establishment of a variety of seedlings of browse species is dependent upon site treatment, subsequent development of browse is dependent upon removal of either high shade (as in logging) or low shade (as in timber stand improvement), accompanied by maintenance of reduced deer populations.

Christensen, John F., and Dale W. McNeal. *ANAPLASMA MARGINALE* INFECTION IN DEER IN THE SIERRA NEVADA FOOTHILL AREA OF CALIFORNIA. *Am. J. Vet. Res.* 28(123): 599-600, illus. 1967. [From Biol. Abstr. 49(6), 1968.] *WR 135: 38*

[Univ. Calif., Davis.] *"Odocoileus hemionus columbianus* X *O. h. hemionus."*

Cromer, Jack I. WEST VIRGINIA DEER IN 1967. *W. Va. Dept. Nat. Resources, Div. Fish & Game.* ii + 17 p., 2 figs. [1968.] *WR 135: 38*

Results of the 1967 harvest: a registered kill of 18,318 deer.

Farris, G. C., F. W. Whicker, and A. H. Dahl. EFFECT OF AGE ON RADIOACTIVE AND STABLE STRONTIUM ACCUMULATION IN MULE DEER BONE. In: *(Proceedings of the International Symposium on some aspects of strontium metabolism, 5-7 May, 1966, Chapelarose, Glasgow, and Strontian, Scotland, United Kingdom.) Academic Press* (London & New York). p. 93-102, illus. 1967. [From Biol. Abstr. 49(1), 1968.] *WR 135: 38*

[Colo. State Univ., Fort Collins.]

Jackson, Lawrence, and Robert Miller. THE DEER TAKE IN 1968-69. [*N.Y.*] *Conservationist* 23(6): 13-14, 34. June-July 1969. *WR 135: 38*

Tabulated statewide and regional totals of harvested bucks, does, and fawns. The record harvest and the number of sublegal yearling bucks indicate possible poor herd condition and overpopulation.

Karstad, L., and D. O. Trainer. HISTOPATHOLOGY OF EXPERIMENTAL BLUETONGUE DISEASE OF WHITE-TAILED DEER (VIRUS). *Canadian Vet. J.* 8(11): 247-254, illus. 1967. [From Biol. Abstr. 49(11), 1968. In English with French summ.] *WR 135: 38*

[Ontario Vet. Coll., Guelph, Ontario, Canada.] The predominant lesions were extensive thrombosis associated with hemorrhages, degenerative changes and necrosis in a variety of tissues and organs. The lesions were similar to those of epizootic hemorrhagic disease of deer.

Knox, K. L., J. G. Nagy, and R. D. Brown. WATER TURNOVER IN MULE DEER. *J. Wildl. Mgmt.* 33(2): 389-393, 2 figs. Apr. 1969. *WR 135: 39*
[Colo. State Univ., Fort Collins.] Abstract: Water turnover and kinetics were determined on 11 female mule deer *(Odocoileus hemionus)* ranging in weight from 18 to 42 kg. The percent body water, turnover, half-time, and flux of nine deer maintained in non-confined captivity were: 67%, 11%/day, 6.5 days, and 74 ml/kg day, respectively. The values for the same parameters in two closely confined deer were: 70%, 31%/day, 2.3 days, and 216 ml/kg day, respectively. Dry matter consumption was 65 gm/$(kg)^{3/4}$ and water consumption was 140 gm/$(kg)^{3/4}$ in the nine non-confined deer. The data suggest that water kinetics in non-confined mule deer are not essentially different from other mammals.

Mosby, Henry S., and Charles T. Cushwa. DEER "MADSTONES" OR BEZOARS. *J. Wildl. Mgmt.* 33(2): 434-437, 1 fig. Apr. 1969. *WR 135: 39*
[Va. Polytech. Inst., Blacksburg.] Abstract: Two "madstones" were examined, one found in the rumen of a doe deer killed in a public hunt on the Piedmont National Wildlife Refuge, Georgia and the second from a deer killed near Albany, Georgia. These calculi formed around nuclei of rock in concentric light and dark layers, with the lighter layers being of brushite ($CaHPO_4 \cdot 2H_2O$) and the dark, thin layers of newberyite ($MgHPO_4 \cdot 3H_2O$). No evidence was found to indicate how these calculi might be formed nor their possible pathogenicity.

Myers, Gary T. DEER-AUTO ACCIDENTS--SERIOUS BUSINESS. *Colo. Outdoors* 18(3): 38-40, illus. May-June 1969. *WR 135: 39*
An estimated 4900 deer were killed on Colorado highways in 1968.

Rees, John W. MORPHOLOGIC VARIATION IN THE CRANIUM AND MANDIBLE OF THE WHITE-TAILED DEER *(ODOCOILEUS VIRGINIANUS)*: A COMPARATIVE STUDY OF GEOGRAPHICAL AND FOUR BIOLOGICAL DISTANCES. *J. Morphol.* 128(1): 95-112, 6 figs. May 1969. *WR 135: 39*
[Univ. Mo., Columbia.]

Rees, John W. MORPHOLOGIC VARIATION IN THE MANDIBLE OF THE WHITE-TAILED DEER *(ODOCOILEUS VIRGINIANUS)*: A STUDY OF POPULATIONAL SKELETAL VARIATION BY PRINCIPAL COMPONENT AND CANONICAL ANALYSES. *J. Morphol.* 128(1): 113-130, 6 figs. May 1969. *WR 135: 39*
[Univ. Mo., Columbia.]

Rongstad, Orrin J., and John R. Tester. MOVEMENTS AND HABITAT USE OF WHITE-TAILED DEER IN MINNESOTA. *J. Wildl. Mgmt.* 33(2): 366-379, 7 figs. Apr. 1969. *WR 135: 39*
[Univ. Wis., Madison.] Abstract: Radio transmitters were placed on six white-tailed deer *(Odocoileus virginianus)* in the winter of 1963-64 and eight deer in the winter of 1964-65 and their movements followed with an automatic tracking system. Winter home ranges were between 400 and 1,200 acres. Monthly home ranges were between 422 and 576 acres for the months January through March, 1964 and between 83 and 576 acres for the same months in 1965. Home ranges decreased with increased snow depth. The mean percentage of time associated with a cedar swamp changed from 74% during the day in January, 1964 to 17% during the night in March, 1964, while it changed from 73 to 88% during the same periods in 1965. Migration of seven radio-tagged deer occurred shortly after snow melted in fields in mid-April, 1965, but was between late April and early May for three deer in 1964 when snow was mostly gone in March. Does and juveniles moved with practically no meandering from their winter to summer range while adult bucks seemed more inclined to wander.

Severinghaus, C. W., and Stuart Free, editors. TRANSACTIONS OF THE FOURTH MEETING OF THE NORTHEASTERN DEER STUDY GROUP / AUGUST 12-14, 1968. *N.Y. State Conserv. Dept.* v + 86 p., 7 figs. [1969.] *WR 135: 40*

[Wildl. Res. Lab., Delmar, N.Y.] Transactions of an informal discussion and study meeting on state deer herd management. Three formal presentations are given: *Report on the New York Malone study, Cornell studies of weather effects on deer,* and *Huntington forest studies.* The transactions include reports from each state (N.Y., W. Va., Vt., Mass., Pa.) on the state objectives of deer population management, description of the deer season and the population dynamics factors used to determine the recommended season, and an evaluation of how well the seasons are accomplishing the objectives.

Short, Cathleen P. MORPHOLOGICAL DEVELOPMENT OF THE DEER FETUS *(ODOCOILEUS). M.S. thesis, Stephen F. Austin State Coll.* 76 p. 1967. *WR 135: 40*

Courtesy/ Edwin D. Michael.

Short, Henry L., Charles A. Segelquist, Phil D. Goodrum, and Charles E. Boyd. RUMINO-RETICULAR CHARACTERISTICS OF DEER ON FOOD OF TWO TYPES. *J. Wildl. Mgmt.* 33(2): 380-383. Apr. 1969. *WR 135: 40*

[Southern Forest Expt. Sta., Nacogdoches, Texas.] Abstract: Ten white-tailed deer *(Odocoileus virginianus)* that fed mainly on acorns had markedly different rumino-reticular (R-R) characteristics from ten that ate mostly grasses and browse. The percentage of dry matter in R-R contents was significantly greater for deer eating acorns (27 vs. 15%). Although deer on the two diets had similar total volatile fatty acid concentrations in rumen liquor, the deer eating acorns had a significantly lower R-R pH (5.5 vs. 5.9) and molar percent of acetic acid (59 vs. 73%), while the deer that ate browse and grass had lower R-R levels of propionic (16 vs. 22%) and butyric (9 vs. 15%) acids. More gas was produced by in vitro fermentations of rumen liquor from acorn-fed than from browse-fed deer.

Shult, Milo J., and Karl E. Menzel. SOME OBSERVED DEER BEHAVIOR IN RELATION TO AN IRRIGATION CANAL IN NEBRASKA. *Iowa State J. Sci.* 43(4): 335-340. May 1969. *WR 135: 40*

[Iowa State Univ., Ames.] Abstract: A subjective analysis of observations of deer behavior along the Ainsworth Canal in Nebraska showed certain noteworthy patterns. The greatest activity of deer in connection with the canal during the summer took place during the early part of the season. Deer in the yearling age class were the most active. Both white-tailed deer *(Odocoileus virginianus)* and mule deer *(Odocoileus hemionus)* were observed during all daylight hours. White-tailed deer accounted for 77% and 81% of the deer found trapped in the canal in 1966 and 1967, respectively. In the hunting season kill, however, they comprised only 31% of the animals bagged. This high incidence of whitetails in the canal was attributed to greater movements by this species. No reason was discovered to explain exactly why deer enter the canal. Variation was present among individuals of both species of deer as far as abilities to escape from the canal were concerned. Tests of escape structures in the canal indicate they were of limited value. The best way to prevent drownings will be to exclude animals by fencing or covering the canal. Some deer were evidently unable to recognize existing earth-covered bridges as places where the canal could be crossed.

Sikes, Dennis, Frank A. Hayes, and Annie Prestwood. ELECTROPHORETIC DISTRIBUTION OF SERUM PROTEINS OF NORMAL AND AN ARTHRITIC WHITE-TAILED DEER *(ODOCOILEUS VIRGINIANUS). Am. J. Vet. Res.* 30(1): 143-148, 3 figs. Jan. 1968. *WR 135: 40*

Chronic proliferative arthritis of unknown cause, accompanied by pannus formation, hyperproteinemia, hypergammaglobulinemia, and hypoalbuminemia, occurred in a deer. Pathologic changes of tissues, changes of blood serum protein, and positive results in rheumatoid arthritis test for man were similar to changes and test results observed in rheumatoid arthritis in man and swine.--From summ.

MAMMALS--MARINE

Banks, Richard C., and Robert L. Brownell. TAXONOMY OF THE COMMON DOLPHINS OF THE EASTERN PACIFIC OCEAN. *J. Mammal.* 50(2): 262-271, 3 figs. June 1969. *WR 135: 41*
[U.S. Natl. Museum, Washington, D.C.]

Bechervaise, John. CONTRAST IN SEALS (ECOLOGY, BEHAVIOR). *Victorian Nat.* 84 (2): 33-38, illus. 1967. [From Biol. Abstr. 49(3), 1968.] *WR 135: 41*

Belkin, A. N. [THE INTERRELATIONS OF SEA LIONS AND FUR SEALS AT COMMON REPRODUCTIVE ROOKERIES AS EXEMPLIFIED BY OBSERVATIONS ON THE RESTORATION OF FUR-SEAL ROOKERIES IN THE KURIL ISLANDS.] *Izvest. Tikhookean. Nauch.-Issled. Inst. Ryb. Khoz. Okeanogr.* 58: 49-68. 1966. [From Biol. Abstr. 49(4), 1968, from Referat. Zhur., Biol., 1966, no. 11I518. Transl. of Russian abstr.] *WR 135: 41*

Belkin, A. N. [THE SUMMER DISTRIBUTION, STOCKS, HUNTING PROSPECTS, AND SOME FEATURES OF THE BIOLOGY OF STELLER'S SEA LIONS LIVING ON THE KURILE ISLANDS.] *Izvest. Tikhookean. Nauch.-Issled. Inst. Ryb. Khoz. Okeanogr.* 58: 69-95. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 11I519. Transl. of Russian abstr.] *WR 135: 41*

Bertram, C. K. Ricardo, and G. C. L Bertram. THE SIRENIA AS AQUATIC MEAT-PRODUCING HERBIVORES. *Symposia Zool. Soc. London* 21: 385-391. 1968. [From J. Mammal. 50(2), 1969.] *WR 135: 41*

Berzin, A. A., and A. A. Rovnin. [THE DISTRIBUTION AND MIGRATION OF WHALES IN THE NORTHEASTERN PART OF THE PACIFIC OCEAN AND IN THE BERING SEA AND THE SEA OF CHUKOTSK.] *Izvest. Tikhookean. Nauch.-Issled. Inst. Ryb. Khoz. Okeanogr.* 58: 179-207. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 11I528. Transl. of Russian abstr.] *WR 135: 41*

Best, P. B. THE SPERM WHALE *(PHYSETER CATODON)* OFF THE WEST COAST OF SOUTH AFRICA: I. OVARIAN CHANGES AND THEIR SIGNIFICANCE. *South Africa Div. Sea Fish. Invest. Rept.* 61: 1-27, illus. 1967. [From Biol. Abstr. 49(6), 1968.] *WR 135: 41*

Best, P. B. THE SPERM WHALE *(PHYSETER CATODON)* OFF THE WEST COAST OF SOUTH AFRICA: 2. REPRODUCTION IN THE FEMALE. *South Africa Div. Sea Fish. Invest. Rept.* 66: 1-32. 1968. [From J. Mammal. 50(2), 1969.] *WR 135: 41*

Bonner, W. Nigel. THE FUR SEAL OF SOUTH GEORGIA. *British Antarctic Surv., Sci. Rept.* 56: 1-81 + appendix and 6 pls. 1968. [From J. Mammal. 50(2), 1969.] *WR 135: 41*

Brown, S. G. THE RESULTS OF SEI WHALE MARKING IN THE SOUTHERN OCEAN TO 1967. *Norwegian Whaling Gaz.* 57(4): 77-83. July-Aug. 1968. [From J. Mammal. 50(2), 1969.] *WR 135: 41*

Bryden, M. M. DEVELOPMENT AND GROWTH OF THE SOUTHERN ELEPHANT SEAL *(MIROUNGA LEONINA)* (LINN.). *Pap. Proc. Roy. Soc. Tasmania* 102: 25-30, illus. 1968. [From Biol. Abstr. 49(22), 1968.] *WR 135: 41*
[Dept. External Affairs, Melbourne, Australia.]

Chapman, Douglas G., and Ancel M. Johnson. ESTIMATION OF FUR SEAL PUP POPULATIONS BY RANDOMIZED SAMPLING. *Trans. Am. Fisheries Soc.* 97(3): 264-270. July 1968. [From J. Mammal. 50(2), 1969.] *WR 135: 41*

Chernyi, E. I. [THE DISTRIBUTION OF BALEEN WHALES IN THE ANTARCTIC AS A FUNCTION OF HYDROLOGICAL CONDITIONS.] *Izvest. Tikhookean. Nauch.-Issled. Inst. Ryb. Khoz. Okeanogr.* 58: 223-228. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 11I529. Transl. of Russian abstr.] *WR 135: 41*

Chugunkov, D. I. [THE LOCAL NATURE OF HERDS OF FUR SEALS LIVING ON BERING AND MEDNYI ISLANDS.] *Izvest. Tikookean. Nauch.-Issled. Inst. Ryb. Khoz. Okeanogr.* 58: 15-21, illus. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 11I515. Transl. of Russian abstr.] *WR 135: 42*

Chugunkov, D. I., and V. G. Prokhorov. [NEW INFORMATION ABOUT THE OVER-WINTERING OF FUR SEALS IN THE BERING SEA.] *Izvest. Tikhookean. Nauch.-Issled. Inst. Ryb. Khoz. Okeanogr.* 58: 233-234. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 11I516. Transl. of Russian abstr.] *WR 135: 42*

Elsner, Robert, Gerald L. Kooyman, Claude Lenfant, and Charles M. Drabek. CARDIOVASCULAR ADAPTATION OF DIVING WEDDELL SEALS. *Antarctic J.* 3(4): 134-135. July/Aug. 1968. [From J. Mammal. 50(2), 1969.] *WR 135: 42*

Fedoseev, G. A. [AEROVISUAL OBSERVATIONS ON MARINE MAMMALS IN THE BERING SEA AND THE SEA OF CHUKOTSK.] *Izvest. Tikhookean. Nauch.-Issled. Inst. Ryb. Khoz. Okeanogr.* 58: 173-177. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 11I527. Transl. of Russian abstr.] *WR 135: 42*

Fedoseev, G. A. [THE CONDITION OF THE STOCKS AND THE EFFICIENT USE OF THE SEALS OF THE SEA OF OKHOTSK.] *Izvest. Tikhookean. Nauch.-Issled. Inst. Ryb. Khoz. Okeanogr.* 58: 129-135. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 12I588.] *WR 135: 42*

Fogden, S. C. L. SUCKLING BEHAVIOUR IN THE GREY SEAL *(HALICHOERUS GRYPUS)* AND THE NORTHERN ELEPHANT SEAL *(MIROUNGA ANGUSTIROSTRIS).* *J. Zool.* 154(4): 415-420. Apr. 1968. [From J. Mammal. 50(2), 1969.] *WR 135: 42*

Foot, Don Charles. REMARKS ON ESKIMO SEALING AND THE HARP SEAL CONTROVERSY. *Arctic* 20(4): 267-268. 1967. [From Biol. Abstr. 49(17), 1968.] *WR 135: 42*
[McGill Univ., Montreal, Quebec, Canada.]

Gaskin, D. E. THE NEW ZEALAND CETACEA. *Fisheries Res. Bull. New Ser.* (Wellington) 1: 1-92. 1968. [From J. Mammal. 50(2), 1969.] *WR 135: 42*

Gewalt, Wolfgang. ÜBER DEN BELUGA-WAL *DELPHINAPTERUS LEUCAS* (PALLAS, 1776) IM RHEIN BEI DUISBURG. [ON *DELPHINAPTERUS LEUCAS* (PALLAS, 1776) RHINE RIVER NEAR DUISBURG.] *Z. Säugetierk.* 32(2): 65-86, illus. 1967. [From Biol. Abstr. 49(3), 1968. In German.] *WR 135: 42*

Jonsgård, Åge. HVALENE, AKTUELLE I DISKUSJONEN OM NATURVERN. [WHALES RELEVANT TO DISCUSSIONS ON NATURE CONSERVATION.] *Fauna* (Oslo) 20(2): 48-50, illus. 1967. [From Biol. Abstr. 49(13), 1968. In Swedish with English summ.] *WR 135: 42*
[Statens Inst. Hvalforskning, Oslo, Norway.]

Jonsgård, Åge. A NOTE ON THE ATTACKING BEHAVIOR OF THE KILLER WHALE *(ORCINUS ORCA).* *Norwegian Whaling Gaz.* 57(4): 84-85. July-Aug. 1968. [From J. Mammal. 50(2), 1969.] *WR 135: 42*

Kasuya, Toshio, and Seiji Ohsumi. [A SECONDARY SEXUAL CHARACTER OF THE SPERM WHALE.] *Sci. Rept. Whales Res. Inst.* 20: 89-93, illus. 1966. [From Biol. Abstr. 49(6), 1968. In Japanese.] *WR 135: 42*
[Ocean Res. Inst., Univ. Tokyo, Tokyo, Japan.]

King, Judith E. THE ROSS AND OTHER ANTARCTIC SEALS. *Australian Nat. Hist.* 16(1): 29-32, illus. 1968. [From Biol. Abstr. 49(19), 1968.] *WR 135: 42*
[British Mus. Nat. Hist., London, England.]

Kooyman, Gerald L. AN ANALYSIS OF SOME BEHAVIORAL AND PHYSIOLOGICAL CHARACTERISTICS RELATED TO DIVIDING IN THE WEDDELL SEAL. *Antarctic Res. Ser.* 11: 227-261, illus. 1967. [From Biol. Abstr. 49(24), 1968.] *WR 135: 43*
[Univ. Calif., San Diego.]

Kosygin, G. M. [DISTRIBUTION OF THE BEARDED SEAL IN THE BERING SEA IN THE SPRING FROM 1962 TO 1964.] *Izvest. Tikhookean. Nauch.-Issled. Inst. Ryb. Khoz. Okeanogr.* 58: 125-128. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 11I523. Transl. of Russian abstr.] *WR 135: 43*

Kosygin, G. M. [THE DISTRIBUTION AND SOME BIOLOGICAL TRAITS OF BERING SEA PINNIPEDS SEEN IN THE SPRING AND SUMMER OF 1963.] *Izvest. Tikhookean. Nauch.-Issled. Inst. Ryb. Khoz. Okeanogr.* 58: 117-124. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 11I514. Transl. of Russian abstr.] *WR 135: 43*
"Ribbon seals and bearded seals."

Kosygin, G. M. [SIZE AND BODY WEIGHT OF THE BERING SEA BEARDED SEAL.] *Izvest. Tikhookean. Nauch.-Issled. Inst. Ryb. Khoz. Okeanogr.* 58: 149-151. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 11I455. Transl. of Russian abstr.] *WR 135: 43*

Kosygin, G. M. [SOME INFORMATION ON THE DIET OF THE BEARDED SEAL IN THE BERING SEA IN SPRING AND SUMMER.] *Izvest. Tikhookean. Nauch.-Issled. Inst. Ryb. Khoz. Okeanogr.* 58: 153-157. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 11I524. Transl. of Russian abstr.] *WR 135: 43*

Krylov, V. I. [COMPOSITION BY AGE AND SEX AND DENSITY OF DIFFERENT GROUPS OF PACIFIC WALRUSES ON ICE AND IN SHORE ROOKERIES.] *Izvest. Tikhookean. Nauch.-Issled. Inst. Ryb. Khoz. Okeanogr.* 58: 97-103. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 11I521. Transl. of Russian abstr.] *WR 135: 43*

Mercer, M. C. RECORDS OF THE ATLANTIC WALRUS, *ODOBENUS ROSMARUS ROSMARUS*, FROM NEWFOUNDLAND. *J. Fish. Res. Board Canada* 24(12): 2631-2635, illus. 1967. [From Biol. Abstr. 49(8), 1968.] *WR 135: 43*
[Fish. Res. Board Canada, Biol. Sta., St. John's, Newfoundland, Canada.]

Mercer, M. C. WINTERING OF PILOT WHALES, *GLOBICEPHALA MELAENA*, IN NEWFOUNDLAND INSHORE. *J. Fish. Res. Board Canada* 24(11): 2481-2484. 1967. [From Biol. Abstr. 49(7), 1968.] *WR 135: 43*
[Fish. Res. Board Canada, Biol. Sta., St. John's, Newfoundland, Canada.]

Mordvinov, Y. E. [A STUDY OF LOCOMOTION IN SOME PINNIPEDIA.] *Zool. Zhur.* 47 (9): 1394-1402. Sept. 1968. [From J. Mammal. 50(2), 1969. In Russian with English summ.] *WR 135: 43*

Orr, Robert T., and Thomas C. Poulter. SOME OBSERVATIONS ON REPRODUCTION, GROWTH, AND SOCIAL BEHAVIOR IN THE STELLER SEA LION *(EUMETOPIAS JUBATA)*. *Proc. Calif. Acad. Sci.* 35(10): 103-226, illus. 1967. [From Biol. Abstr. 49(8), 1968.] *WR 135: 43*
[Calif. Acad. Sci., San Francisco.]

Ostroumov, A. G. [SOME INFORMATION ON THE BEHAVIOR OF PINNIPEDS IN THE WATERS OF THE KAMCHATKA SHORE.] *Izvest. Tikhookean. Nauch.-Issled. Inst. Ryb. Khoz. Okeanogr.* 58: 237-238. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 11I525. Transl. of Russian abstr.] *WR 135: 43*

Panina, G. K. [THE DIET OF FUR SEALS IN THE WESTERN PART OF THE PACIFIC OCEAN.] *Izvest. Tikhookean. Nauch.-Issled. Inst. Ryb. Khoz. Okeanogr.* 58: 23-40, illus. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 11I517. Transl. of Russian abstr.] *WR 135: 43*

Panina, G. K. [THE DIET OF SEA LIONS AND SEALS IN THE KURIL ISLANDS.] *Izvest. Tikhookean. Nauch.-Issled. Inst. Ryb. Khoz. Okeanogr.* 58: 235-236. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 11I520. Transl. of Russian abstr.] *WR 135: 44*

Peterson, Richard S., and George A. Bartholomew. AIRBORNE VOCAL COMMUNICATION IN THE CALIFORNIA SEA LION, *ZALOPHUS CALIFORNIANUS*. *Animal Behaviour* 17(1): 17-24 + 4 pls. Feb. 1969. *WR 135: 44*
[Univ. Calif., Santa Cruz.] The vocalizations of adult males consist of a bark and relate primarily to territorial behavior and social status. Females bark, squeal, belch, and growl in aggressive behavior and mother-infant interactions.--From summ.

Pilleri, G. CONSIDERATIONS SUR LE CERVEAU ET LE COMPORTEMENT DU *DELPHINUS DELPHIS*. [THOUGHTS ABOUT THE BRAIN AND BEHAVIOR OF *DELPHINUS DELPHIS*.] *Rev. Suisse Zool.* 74(4): 665-677, illus. 1967. [From Biol. Abstr. 49(17), 1968. In French with German and English summ.] *WR 135: 44*
[Inst. Anat. Cerebrale, Waldau/Berne, Switzerland.]

Rand, R. W. THE CAPE FUR-SEAL *(ARCTOCEPHALUS PUSILLUS)*. 3. GENERAL BEHAVIOUR ON LAND AND AT SEA. *South Africa Div. Sea Fish. Invest. Rept.* 60: 1-39, illus. 1967. [From Biol. Abstr. 49(2), 1968.] *WR 135: 44*

Ronald, K., M. E. Foster, and E. Johnson. THE HARP SEAL, *PAGOPHILUS GROENLANDICUS* (ERXLEBEN, 1777). II. PHYSICAL BLOOD PROPERTIES. *Canadian J. Zool.* 47 (3): 461-468, 9 figs. May 1969. *WR 135: 44*
[Univ. Guelph, Guelph, Ontario, Canada.] Reference is made to various aspects of the seal's biology, including the molt, migration, and parasitism.--From abstr.

Ross, G. J. B. THE SOUTHERN ELEPHANT SEAL, *MIROUNGA LEONINA*, ON SOUTH AFRICAN COASTS. *Ann. Cape Provincial Mus. (Nat. Hist.)* 6(12): 137-139, 1 fig. 6 May 1969. *WR 135: 44*
[Port Elizabeth Mus., Port Elizabeth, South Africa.]

Schevill, William E. SEA LION ECHO RANGING. *J. Acoustical Soc. Am.* 43(6): 1452-1459. June 1968. [From J. Mammal. 50(2), 1969.] *WR 135: 44*

Siniff, Donald B., and David R. Cline. POPULATION DYNAMICS OF ANTARCTIC SEALS (IWSOE-1968). *Antarctic J.* 3(4): 86-87. July/Aug. 1968. [From J. Mammal. 50 (2), 1969.] *WR 135: 44*

Sokolov, A. S., G. M. Kosygin, and E. A. Tikhomirov. [SOME INFORMATION ON THE WEIGHT OF THE INTERNAL ORGANS OF PINNIPEDS OF THE BERING SEA.] *Izvest. Tikhookean. Nauch.-Issled. Inst. Ryb. Khoz. Okeanogr.* 58: 137-147. 1966. [From Biol. Abstr. 49(4), 1968, from Referat. Zhur., Biol., 1966, no. 11I456. Transl. of Russian abstr.] *WR 135: 44*

Tarasevich, M. N. [STRUCTURE OF CETACEAN GROUPINGS. 1. STRUCTURE OF THE GROUPINGS OF MALE *PHYSETER CATODON*.] *Zool. Zhur.* 46(1): 124-131. 1967. [From Biol. Abstr. 49(14), 1968. In Russian with English summ.] *WR 135: 44*
[All-Union Res. Inst. Mar. Fish. Oceanogr., Moscov, USSR.]

Tikhomirov, E. A. [DETERMINING THE SPECIES OF FAR-EASTERN SEALS FROM AN AIRPLANE.] *Izvest. Tikhookean. Nauch.-Issled. Inst. Ryb. Khoz. Okeanogr.* 58: 163-172. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 11I526. Transl. of Russian abstr.] *WR 135: 44*

Tikhomirov, E. A. [SOME DATA ON THE DISTRIBUTION AND BIOLOGY OF THE HARBOR SEAL IN THE SUMMER AND FALL IN THE SEA OF OKHOTSK, AND THE ORGANIZATION OF HUNTING FOR IT.] *Izvest. Tikhookean. Nauch.-Issled. Inst. Ryb. Khoz. Okeanogr.* 58: 105-115. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 12I589. Transl. of Russian abstr.] *WR 135: 44*

MAMMALS--MARINE--Continued

Tomilin, A. G., and M. I. Smyshlyaev. [SOME FACTORS OF WHALE MORTALITY (TO THE PROBLEM OF THE DISEASES OF CETACEANS).] *Bull. Moscow Soc. Nat., Biol. Ser.* 73(3): 5-12. 1968. [From J. Mammal. 50(2), 1969. In Russian with English summ.] *WR 135: 45*

Usher, Peter J., and Michael Church. ON THE RELATIONSHIP OF WEIGHT, LENGTH AND GIRTH OF THE RINGED SEAL *(PUSA HISPIDA)* OF THE CANADIAN ARCTIC. *Arctic* 22 (2): 120-129, 4 figs. June 1969. In English with French and Russian abstr. *WR 135: 45*

Abstract: The relationships between several body measurements of the ringed seal *(Pusa hispida)* are analysed to determine which provide the most reliable prediction of weight. A formula involving the two parameters, length and maximum girth, is the most precise predictor, whereas the best single indicator is girth.

Vaughan, R. W. THE STATUS OF THE WEDDELL SEAL *(LEPTONYCHOTES WEDDELLI)* AT SOUTH GEORGIA (DISTRIBUTION, BEHAVIOR). *British Antarctic Surv. Bull.* 15: 71-74. 1968. [From Biol. Abstr. 49(23), 1968.] *WR 135: 45*

[Seals Res. Unit, Fisheries Lab., Suffolk, England.]

Vaz-Ferreira, Raul. ECOLOGIA TERRESTRE Y MARINA DE LOS PINNIPEDIOS DEL ATLANTICO SUDOCCIDENTAL. [LAND AND MARINE ECOLOGY OF THE PINNIPEDS FROM THE SOUTHWEST ATLANTIC.] *An. Acad. Brasil Cienc.* 37(Suppl.): 179-191, illus. 1965. [From Biol. Abstr. 49(12), 1968. In Spanish with English summ.] *WR 135: 45*

MAMMALS--OTHER GROUPS

Blackwell, K. F., and J. I. Menzies. OBSERVATIONS ON THE BIOLOGY OF THE POTTO *(PERODICTICUS POTTO* MILLER). *Mammalia* 32(3): 447-451 + [1] pl. Sept. 1968. [From J. Mammal. 50(2), 1969.] *WR 135: 45*

Caughley, Graeme. CALCULATION OF POPULATION MORTALITY RATE AND LIFE EXPECTANCY FOR THAR AND KANGAROOS FROM THE RATIO OF JUVENILES TO ADULTS. *New Zealand J. Sci.* 10(2): 578-584, illus. 1967. [From Biol. Abstr. 49(4), 1968.] *WR 135: 45*

[Forest Res. Inst., Fororua, New Zealand.]

Chanudet, F., M. C. Saint Girons, and J. H. Van Bree. NOTES SUR LES MAMMIFÈRES DE FRANCE: VI. SUR LA NOURRITURE DE LA GENETTE, *GENETTA GENETTA* (LINNAEUS, 1758) EN VENDÉE. [NOTES ON THE MAMMALS OF FRANCE: VI. ON NUTRITION OF THE GENET, *GENETTA GENETTA* (LINNAEUS, 1758), IN VENDÉE.] *Mammalia* 31(4): 668-669. 1967. [From Biol. Abstr. 49(10), 1968. In French.] *WR 135: 45*

[Mus. Hist. Nat., Amsterdam, Netherlands.]

Heinsohn, George E. ECOLOGY AND REPRODUCTION OF THE TASMANIAN BANDICOOTS *(PERAMELES GUNNI* AND *ISOODON OBESULUS). Univ. Calif. Publ. Zool.* 80: 1-107, illus. 1966. [From Biol. Abstr. 49(1), 1968.] *WR 135: 45*

Kean, R. I. MARSUPIALS (CLASSIFICATION, EVOLUTION, DISPERSION). *Tuatara* 14 (3): 105-120, illus. 1966. [From Biol. Abstr. 49(1), 1968.] *WR 135: 45*

[Forest Res. Inst., Wellington, New Zealand.]

Laws, R. M. ASPECTS OF REPRODUCTION IN THE AFRICAN ELEPHANT, *LOXODONTA AFRICANA. J. Reproduction & Fertility*, Suppl. 6. p. 193-217, 12 figs. 1969. *WR 135: 45*

[Univ. Cambridge, Cambridge, England.]

Laws, R. M. THE TSAVO RESEARCH PROJECT. *J. Reproduction & Fertility*, Suppl. 6. p. 495-531, 10 figs. 1969. *WR 135: 45*

[Univ. Cambridge, Cambridge, England.] The habitat in Tsavo Natl. Park is changing from *Commiphora-Acacia* bush to open grassland under the destructive influence of fire and elephant. Studies on the elephant populations are reviewed and discussed.

Laws, R. M. OCCURRENCE OF PLACENTAL SCARS IN THE UTERUS OF THE AFRICAN ELEPHANT *(LOXODONTA AFRICANA)*. *J. Reproduction & Fertility* 14: 445-449, 2 figs. 1967. *WR 135: 46*
[Univ. Cambridge, Cambridge, England.]

Laws, R. M. INTERACTIONS BETWEEN ELEPHANT AND HIPPOPOTAMUS POPULATIONS AND THEIR ENVIRONMENTS. *East African Agr. & Forestry J.*--Spec. Issue 33: 140-147. June 1968. *WR 135: 46*
[Univ. Cambridge, Cambridge, England.]

Laws, R. M., and I. S. C. Parker. RECENT STUDIES ON ELEPHANT POPULATIONS IN EAST AFRICA. *Symposium Zool. Soc. London* no. 21. p. 319-359, 9 figs. 1968. *WR 135: 46*
[Univ. Cambridge, Cambridge, England.] Growth data, reproductive cycles, fertility, group size frequencies, weight of stomach fill, and age structure of three populations in Tsavo and Murchison Falls National Parks are discussed.

Phillips, Carleton J., and J. Knox Jones, Jr. NOTES ON REPRODUCTION AND DEVELOPMENT IN THE FOUR-EYED OPOSSUM, *PHILANDER OPOSSUM*, IN NICARAGUA. *J. Mammal.* 50(2): 345-348, 1 fig. June 1969. *WR 135: 46*
[Univ. Kans., Lawrence.]

Smith, J. S. Boys. BEHAVIOUR OF A HEDGEHOG, *ERINACEUS EUROPAEUS*. *J. Zool.* 153(4): 564-566. 1967. [From Biol. Abstr. 49(24), 1968.] *WR 135: 46*
[St. John's Coll., Cambridge, England.]

Solomatin, A. O. [VISITATIONS OF SOURCES BY ONAGERS AND BEHAVIORAL PATTERNS ON THE WATERING PLACES.] *Bull. Moscow Obshch. Ispit. Prirody (Biol.)* 72(4): 25-35, illus. 1967. [From Biol. Abstr. 49(16), 1968. In Russian with English summ.] *WR 135: 46*

BIRDS--GENERAL

Mayfield, Harold. HEARING LOSS AND BIRD SONG. *Living Bird* 5: 167-175, 4 figs. 1966. *WR 135: 46*
[River Road, R.F.D., Waterville, Ohio.] Comparison with data on hearing thresholds of people at various ages suggests tentatively that less than one half of the men 59 to 65 years of age will be able to hear at 20 meters the golden-winged warbler and other birds whose voices are pitched mainly in the octave band centering on 8,000 cycles per second.--From summ.

Parkes, Kenneth C. SPECULATIONS ON THE ORIGIN OF FEATHERS. *Living Bird* 5: 77-86, 1 fig. + 1 pl. 1966. *WR 135: 46*
[Carnegie Mus., Pittsburgh, Pa.]

Paspaleva, Maria, and Matei Tălpeanu. OBSERVATIONS ORNITHOLOGIQUES DANS LES CANYONS DE LA DOBROUDJA (EN BULGARIE ET ROUMANIE). [ORNITHOLOGICAL OBSERVATIONS IN THE CANYONS OF THE DOBROUDJA (IN BULGARIA AND ROMANIA).] *Trav. Mus. Hist. Nat. Grigore Antipa* 7: 409-418, illus. 1967. [From Biol. Abstr. 49(18), 1968. In French with Romanian and Russian summ.] *WR 135: 46*
[Inst. Zool. Mus. Hist. Nat., 1 Boul. Rouski, Sofia, Bulgaria.]

Ross, C. Chandler. ALBINISM AMONG NORTH AMERICAN BIRDS (ANNOTATED LIST). *Cassinia* 47: 2-21. 1963. [From Biol. Abstr. 49(7), 1968.] *WR 135: 46*
[Acad. Nat. Sci., Philadelphia, Pa.]

BIRDS--TECHNIQUES

Schladweiler, Philip, and Thomas W. Mussehl. USE OF MIST-NETS FOR RECAPTURING RADIO-EQUIPPED BLUE GROUSE. *J. Wildl. Mgmt.* 33(2): 443-444. Apr. 1969. *WR 135: 47*
[Mont. Fish & Game Dept., Bozeman.] Abstract: A mist-net was used as a mobile unit to recapture radio-instrumented blue grouse *(Dendragapus obscurus)*. Two men positioned the net, while a third flushed grouse toward it. Five female blue grouse and their entire broods, chicks of six other broods, one incubating and one broodless female, and one adult male ruffed grouse *(Bonasa umbellus)* were captured. The method enabled the recapture of specific, instrumented grouse.

Schnell, Gary D. RECORDING THE FLIGHT-SPEED OF BIRDS BY DOPPLER RADAR. *Living Bird* 4: 79-87, 4 figs. 1965. *WR 135: 47*
[Northern Ill. Univ., DeKalb.] List of flight speeds for 17 spp.

Startup, Christine M. THE (METHOD FOR) CLIPPING AND PINIONING OF (BIRD) WINGS. *J. Small Anim. Pract.* 8(7): 401-403, illus. 1967. [From Biol. Abstr. 49(1), 1968.] *WR 135: 47*
[Grove Lodge Anim. Hosp., Worthing, Sussex, England.]

BIRDS--MORPHOLOGY & PHYSIOLOGY

Davis, Russell E. FOOD REQUIREMENTS AND WEIGHTS OF ROBIN NESTLINGS. *Inland Bird Banding News* 41(2): 50-51. Mar.-Apr. 1969. *WR 135: 47*
[Clayton, Ill.] Daily weight gain or loss of eight nestlings (contents of two nests), and amount of food consumed by one hand-fed 10-day-old nestling.

Haukioja, Erkki. WEIGHTS OF REED BUNTINGS *(EMBERIZA SCHOENICLUS)* DURING SUMMER. *Ornis Fennica* 46(1): 13-21, 4 figs. 1969. In English with Finnish summ. *WR 135: 47*
[Univ. Turku, Turku, Finland.]

Rising, James D. THE EFFECT OF TEMPERATURE VARIATION ON THE METABOLIC ACTIVITY OF THE HARRIS' SPARROW. *Comp. Biochem. Physiol.* 25: 327-333, 1 fig. 1968. *WR 135: 47*
[Mus. Nat. Hist., Univ. Kans., Lawrence.] Patterns of metabolic responses to manipulated experimental temperatures are probably environmentally selected and probably do not reflect phylogenetic relationships.--From summ.

BIRDS--BEHAVIOR

Borror, Donald J. SONGS OF THE YELLOWTHROAT. *Living Bird* 6: 141-161, 133 figs. 1967. *WR 135: 47*
[Ohio State Univ., Columbus.] Based on a study of the recorded songs of 411 yellowthroats representing 10 North American subspecies. There was a geographic variation in the number of notes per phrase, complexity of notes and phrases, and length of phrases. Descriptions of songs of yellowthroats in New England some 60 years ago show that these birds then sang almost exclusively 3-note phrases. According to my recordings about two-thirds of the New England birds now sing 4- and 5-note phrases. This indicates that in the last 60 years the average number of notes per phrase has increased in this region.--From summ.

Borror, Donald J. UNUSUAL SONGS IN PASSERINE BIRDS. *Ohio J. Sci.* 68(3): 129-138, illus. 1968. [From Biol. Abstr. 49(23), 1968.] *WR 135: 47*
[Ohio State Univ., Columbus.]

Bowman, Robert I., and Stephen L. Billeb. BLOOD-EATING IN A GALÁPAGOS FINCH. *Living Bird* 4: 29-44, 11 figs. 1965. *WR 135: 48*
[San Francisco State Coll., San Francisco, Calif.] Summary: Blood-eating is described for the Wenman Island race of the Galápagos "Sharp-beaked Ground-finch" *(Geospiza difficilis)*. As a primary method of feeding this habit is unknown in any other avian species. Instances of secondary feeding on blood are mentioned and compared with the feeding habit of the finch. The host-parasite relationship between booby and finch and the possible origin of the blood-eating habit are discussed.

Cade, Tom J. ECOLOGICAL AND BEHAVIORAL ASPECTS OF PREDATION BY THE NORTHERN SHRIKE. *Living Bird* 6: 43-86, 11 figs. 1967. *WR 135: 48*
[Cornell Univ., Ithaca, N.Y.] *"Lanius excubitor."*

Dilger, William C., and J. Cherrill Wallen. THE PECKING RESPONSES OF PEAFOWL CHICKS. *Living Bird* 5: 115-125, 6 figs. 1966. *WR 135: 48*
[Cornell Univ., Ithaca, N.Y.] In testing the pecking responses the preferred size of circular objects was 2 mm and preferences of color ranked as follows: black, white, blue, green, yellow and red.

Erz, W. VERSTAEDTERUNG UNSERER VOGELWELT. [URBANIZATION OF OUR BIRDS.] *Umsch. Wiss. Tech.* 67(3): 85-88, illus. 1967. [From Biol. Abstr. 49(2), 1968. In German.] *WR 135: 48*
[Staatliche Vogelschutzwarte, Essen, Germany.]

Gwinner, E. PERIODICITY OF A CIRCADIAN RHYTHM IN BIRDS BY SPECIES-SPECIFIC SONG CYCLES (AVES, FRINGILLIDAE: *CARDUELIS SPINUS, SERINUS SERINUS*). *Experientia* 22(11): 765-766, illus. 1966. [From Biol. Abstr. 49(2), 1968. In English with German summ.] *WR 135: 48*

Gwinner, Eberhard. TAGESPERIODISCHE SCHWANKUNGEN DER VORZUGSHELLIGKEIT BEI VÖGELN. [CIRCADIAN VARIATIONS IN PREFERRED INTENSITY OF ILLUMINATION IN BIRDS.] *Z. Vergleichende Physiol.* 52(4): 370-379, illus. 1966. [From Biol. Abstr. 49 (2), 1968. In German with English summ.] *WR 135: 48*

Haartman, Lars von. NEST-SITE AND EVOLUTION OF POLYGAMY IN EUROPEAN PASSERINE BIRDS. *Ornis Fennica* 46(1): 1-12. 1969. In English with Finnish summ. *WR 135: 48*
[Univ. Helsinki, Helsinki, Finland.] "The restricted number of nest sites may to some extent facilitate the evolution of polygyny among hole-nesters, but cannot be called upon to explain polygyny among birds with domed nests."

Haneda, Kenzo, and Takehiko Ichikawa. [LIFE HISTORY OF THE EASTERN GRAY WAGTAIL *(MOTACILLA CINERA CASPICA)*: I. BREEDING SEASON (I) NEST BUILDING, COPULATION, EGG LAYING, INCUBATION, CHICK-RAISING.] *Japanese J. Ecol.* 17(3): 93-100, illus. 1967. [From Biol. Abstr. 49(8), 1968. In Japanese with English summ.] *WR 135: 48*
[Shinshu Univ., Nagano, Japan.]

Krapivnyi, A. P. [ANALYSIS OF SIGNALS OF THE EXTERNAL ENVIRONMENT CAUSING REACTIONS OF NEST BEHAVIOR IN BIRDS.] *Zool. Zhur.* 46(11): 1694-1700, illus. 1967. [From Biol. Abstr. 49(22), 1968. In Russian with English summ.] *WR 135: 48*
[Kharkov Pedagog. Inst., Kharkov, USSR.]

Lohmann, M., and J. T. Enright. THE INFLUENCE OF MECHANICAL NOISE ON THE ACTIVITY RHYTHMS OF FINCHES *(CARDUELIS CHLORIS, FRINGILLA COELEBS)*. *Comp. BioChem. Physiol.* 22(1): 289-296, illus. 1967. [From Biol. Abstr. 49(2), 1968.] *WR 135: 48*
[Univ. Calif., San Diego.]

McLean, Edward Bruce. A FIELD STUDY OF ACOUSTICAL BEHAVIOR OF THE CARDINAL *RICHMONDENA CARDINALIS*. *Ph.D. thesis, Ohio State Univ.* 82 p. 1968. [From Dissertation Abstr. 29(9B), 1969.] *WR 135: 49*
The study included male and female pair bond vocalization, territorial defense, antiphonal singing, whisper songs, and developmental subsong.

Millikan, George C., and Robert I. Bowman. OBSERVATIONS ON GALÁPAGOS TOOL-USING FINCHES IN CAPTIVITY. *Living Bird* 6: 23-41, 15 figs. 1967. *WR 135: 49*
[San Francisco State Coll., San Francisco, Calif.] Summary: *Cactospiza pallida*, a finch from the Galápagos Islands, uses many alternative movements when obtaining insects with a twig, and some individuals show characteristic styles of tool-using. Hungry *pallida* use more tools than *pallida* not deprived of food and probe more frequently into food-filled cracks than into empty cracks. We suggest that tool-using probably represents a significant method of feeding in the natural environment and may be used not only to catch insects but also to find them when they are hidden in deep crevices. Manipulative ability of *pallida* is not noticeably greater than that of certain North American mainland birds. We suggest that ecological, and not genetic, factors best explain the unique occurrence of twig-probing in the finches of the Galápagos Islands.

Nelson, J. Bryan. DAS VERHALTEN DER TOELPEL: II. [THE BEHAVIOR OF GANNETS: II.] *Natur & Mus.* 97(12): 502-510, illus. 1967. [From Biol. Abstr. 49(18), 1968. In German.] *WR 135: 49*
[Univ. Aberdeen, Culterty Field Sta., Newburgh, Aberdeenshire, Scotland.]

Podarueva, V. I., and A. S. Davydova. [GEOGRAPHIC VARIABILITY OF THE INTENSITY OF SINGING OF SOME SPARROWS.] *Zool. Zhur.* 46(9): 1412-1414. 1967. [From Biol. Abstr. 49(13), 1968. In Russian with English summ.] *WR 135: 49*
[N. K. Krupskii Pedagog. Inst., Moscow, USSR.]

Poley, Dieter. BEITRAG ZUM BALZVERHALTEN DER KOLIBRIS. [CONTRIBUTION TO THE COURTSHIP BEHAVIOR OF HUMMINGBIRDS.] *J. Ornithol.* 109(1): 37-42, illus. 1968. [From Biol. Abstr. 49(21), 1968. In German with English summ.] *WR 135: 49*
[Duisburger Tierpark, Duisburg, Germany.]

Rising, James D. A MULTIVARIATE ASSESSMENT OF INTERBREEDING BETWEEN THE CHICKADEES, *PARUS ATRICAPILLUS* AND *P. CAROLINENSIS*. *Systematic Zool.* 17(2): 160-169, 6 figs. 28 June 1968. *WR 135: 49*
[Univ. Kans., Lawrence.] Phenetically intermediate birds occur rather commonly in areas where populations of *P. atricapillus* and *P. carolinensis* are in contact. Field observations on chickadees from contact areas suggest that viability may be significantly reduced by interbreeding.--From abstr.

Roche, J. C. LE CHANT DE L'OISEAU: PREMIERS RESULTATS D'UNE RECHERCHE EXPERIMENTALE BASÉE SUR LA "REPASSE." [BIRD SOUND: FIRST RESULTS OF EXPERIMENTAL RESEARCH BASED ON "PLAY-BACK."] *Alauda* 34(1): 55-62. 1966. [From Biol. Abstr. 49(5), 1968. In French.] *WR 135: 49*

Ryabov, V. F., and N. I. Mosalova. [FEEDING HABITS OF LIMICOLAE *(CHETTUSIA GREGARIA* PALL., *VANELLUS VANELLUS, GLAREOLA NORDMANNI, CHARADRIUS ASIATICUS)* IN THE REGIONS OF VIRGIN SOIL DEVELOPMENT.] *Zool. Zhur.* 45(6): 910-918. 1966. [From Biol. Abstr. 49(8), 1968. In Russian with English summ.] *WR 135: 49*
[Moscow State Univ., Moscow, USSR.]

Sick, Helmut. COURTSHIP BEHAVIOR IN THE MANAKINS (PIPRIDAE): A REVIEW. *Living Bird* 6: 5-22, 6 figs. + 1 color plate. 1967. *WR 135: 49*
[Mus. Nacl., Rio de Janeiro, Brazil.]

Smith, W. J. DISPLAYS OF *SAYORNIS PHOEBE* (AVES, TYRANNIDAE). *Behaviour* 33 (3-4): 283-322, 7 figs. 1969. In English with German summ. *WR 135: 49*
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[Sta. Biol., Tour du Valat, 13 Le Sambuc, France.]

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Rendahl, H. DIE ZUGVERHAELTNISSE DER SCHWEDISCHEN BACHSTELZEN */MOTACILLA A. ALBA* L./ MIT BERUECKSICHTIGUNG DER ERGEBNISSE DER NORWEGISCHEN UND FINNISCHEN BERINGUNGEN. [ON MIGRATION PATTERNS OF THE SWEDISH WATER-WAGTAIL *MOTACILLA A. ALBA* L. AND CONSIDERATION OF RESULTS OF NORWEGIAN AND FINNISH BANDING.] *Ark. Zool.* 19(5/6): 543-575, illus. 1967. [From Biol. Abstr. 49(17), 1968. In German.] *WR 135: 51*

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[N.W. Plateau Inst. Biol., Acad. Sinica, Sining, Ch'inghai, China.]

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Middlemiss, Ernest. THE BIRDS OF THE CAPE OF GOOD HOPE NATURE RESERVE. *South African Avifauna Ser. Percy Fitzpatrick Inst. African Ornithol.* no. 62. 34 p. 1969. Price 50¢. *WR 135: 53*
Annotated systematic listing of 143 spp.

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[Univ. Gothenburg, Gothenburg, Sweden.]

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Løppenthin, Bernt. DANSKE YNGLEFUGLE I FORTID OG NUTID. HISTORISKE OG FAUNISTISKE UNDERSØGELSER OVER FUGLENES INDVANDRING, FOREKOMST OG LIVSVILKÅR I DANMARK. [DANISH BREEDING BIRDS: PAST AND PRESENT. HISTORICAL AND FAUNAL INVESTIGATION OF THE IMMIGRATION AND OCCURRENCE OF BIRDS AND THEIR CONDITIONS IN DENMARK.] In: *(Acta Hist. Sci. Nat. Med. 19.) Odense Universiteteforlag* (Odense, Denmark). 609 p. 1967. [From Biol. Abstr. 49(16), 1968. In Danish.] *WR 135: 55*

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[Univ. Cape Town, Cape Town, South Africa.]

BIRDS--ECONOMICS, CONTROL, MORTALITY

Annaeva, E. [ECOLOGY AND AGRICULTURAL SIGNIFICANCE OF THE TURKESTAN ROLLER *(CORACIAS GARRULUS SEMENOWI* LOUD*)* IN THE AGRICULTURAL AREA OF THE AMU-DARYA'S CENTRAL REACHES.] *Uch. Zap. Turkmenskogo Gos. Pedagog. Inst. Ser. Biol. Geogr. Nauk* 2. p. 167-175. 1965. [From Biol. Abstr. 49(4), 1968, from Referat. Zhur., Biol., 1966, no. 2I451. Transl. of Russian abstr.] *WR 135: 55*

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[Univ. Helsinki, Helsinki, Finland.]

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[Am. Mus. Nat. Hist., New York, N.Y.]

BIRDS--PARASITES & DISEASES

Ferianc, O., and M. Lichard. BIRDS IN THE TRIBEC AND BRONSKY INOVEC MOUNTAINS AS HOSTS OF TICKS. *Bull. World Health Organ.* 36(Suppl. 1): 19-23, illus. 1967. [From Biol. Abstr. 49(1), 1968. In English with French summ.] *WR 135: 56*
[Commenius Univ., Bratislava, Czechoslovakia.]

Folz, Sylvester Del. PHENOTYPIC VARIATIONS OF PLASMODIA IN FOWL. *Ph.D. thesis, Univ. Wis.* 294 p. 1968. [From Dissertation Abstr. 29(9B), 1969.] *WR 135: 56*
Incidence and experimental infection of *Plasmodium lophurae* and *P. circumflexum* in geese, ducks, turkeys, chickens, pheasants, and quail.

GAME BIRDS--GENERAL

Janda, Jiří. POTRAVNÍ NÁROKY MLADÝCH KOROPTVÍ A BAŽANTŮ. [FOOD REQUIREMENTS OF YOUNG PARTRIDGES AND PHEASANTS.] *Ústav Věd. Inform. MZLVH* 10(37): 579-598, 2 figs. 1964. In Czech with Russian, French and English summ. *WR 135: 56*
[Výzkumný Ústav Lesa & Myslivosti, Zbraslav, Czechoslovakia.]

Khanamamedov, A. I. [INFORMATION ON THE BIOLOGY OF THE GALLINACEOUS BIRDS OF THE NORTHERN PART OF AZERBAIDZHAN.] *Trudy Inst. Zool. Akad. Nauk Azerb. SSR* 25: 98-110. 1965. [From Biol. Abstr. 49(10), 1968, from Referat. Zhur., Biol., 1966, no. 11I338. Transl. of Russian abstr.] *WR 135: 56*

Cloar, F. Thomas, and Kenneth B. Melvin. PERFORMANCE OF 2 SPECIES OF QUAIL ON BASIC REINFORCEMENT SCHEDULES. *J. Exptl. Anal. Behav.* 11(2): 187-190, illus. 1968. [From Biol. Abstr. 49(14), 1968.] *WR 135: 57*
[Univ. Ala., University.] *"Colinus virginianus* and *Coturnix coturnix japonica."*

Ellis, Jack A., Ronald L. Westemeier, Keith P. Thomas, and Horace W. Norton. SPATIAL RELATIONSHIPS AMONG QUAIL COVEYS. *J. Wildl. Mgmt.* 33(2): 249-254. Apr. 1969. *WR 135: 57*
[Ill. Nat. Hist. Surv., Urbana.] Abstract: The nearest-neighbor method of measuring spatial relationships (Clark and Evans 1954) was used to evaluate the patterns of distribution among quail *(Colinus virginianus)* coveys on a 275-acre portion of a public hunting area in Illinois for the years 1963-1967. Covey distribution did not depart significantly from random, except that in the spring, when population levels were lowest (prebreeding period, March) there appeared to be a consistent tendency toward a uniform dispersion of coveys. Although there was a significant positive correlation between population size and mean covey size, a change in the number of coveys was the primary reflection of changes in quail abundance. Knowledge of the patterns of distribution is considered essential to an evaluation of management effectiveness.

Jones, Richard Evan. THE ROLE OF PROLACTIN AND GONADAL STEROIDS IN THE REPRODUCTION OF CALIFORNIA QUAIL, *LOPHORTYX CALIFORNICUS. Ph.D. thesis, Univ. Calif.* (Berkeley). 141 p. 1968. [From Dissertation Abstr. 29(9B), 1969.] *WR 135: 57*

Kulenkamp, A. W., T. H. Coleman, and R. A. Ernst. ARTIFICIAL INSEMINATION OF BOBWHITE QUAIL. *British Poultry Sci.* 8(3): 177-182, illus. 1967. [From Biol. Abstr. 49(15), 1968.] *WR 135: 57*
[Mich. State Univ., East Lansing.]

Liburd, Eugene M. INCIDENCE OF COCCIDIA IN CALIFORNIA QUAIL *(LOPHORTYX CALIFORNICUS)* FROM THE OKANAGAN VALLEY, BRITISH COLUMBIA. *Canadian J. Zool.* 47 (4): 645-648, 1 fig. July 1969. *WR 135: 57*
[Univ. Alberta, Edmonton, Alberta, Canada.]

Robel, Robert J. FOOD HABITS, WEIGHT DYNAMICS, AND FAT CONTENT OF BOBWHITES IN RELATION TO FOOD PLANTINGS IN KANSAS. *J. Wildl. Mgmt.* 33(2): 237-249, 2 figs. Apr. 1969. *WR 135: 57*
[Kans. State Univ., Manhattan.] Abstract: During a 6-year evaluation of plantings designed to provide additional winter food for bobwhite quail *(Colinus virginianus)* on the Fort Riley Military Reservation in Kansas, quail were killed to provide data on food habits, body weight dynamics, and fat content of carcasses. Crop contents of 591 quail were analyzed to determine food habits, 368 quail were weighed to detect seasonal changes in body weights, and 41 quail carcasses were analyzed for ether extractable fat content. Bobwhites within 800 m of food plots used the plots as feeding areas during winter and early spring months. Compared with birds killed farther than 900 m from a food plot during the winter and early spring, quail killed within 600 m of a food plot during the same period had more food in their crops, maintained higher body weights, and had more fat in their carcasses.

Woodard, A. E., J. A. Moore, and W. O. Wilson. EFFECT OF WAVE LENGTH OF LIGHT ON GROWTH AND REPRODUCTION IN JAPANESE QUAIL *(COTURNIX COTURNIX JAPONICA). Poultry Sci.* 48(1): 118-123, 2 figs. Jan. 1969. *WR 135: 57*
[Univ. Calif., Davis.] Sexual maturity and egg production were hastened in birds brooded under red light. Hatchability, egg weight, and feed conversion were unaffected by color of light.--From summ.

PHEASANTS

Airumyan, K. A. [COMPARATIVE ANALYSIS OF THE EFFECT OF ARTIFICIALLY LENGTHENED DAY ON THE PRODUCTIVITY AND INTERNAL ORGANS OF REPRESENTATIVES OF THE PHASIANIDAE FAMILY.] *Biol. Zhur. Arm.* 19(7): 94-101. 1966. [From Biol. Abstr. 49(2), 1968. In Russian.] *WR 135: 58*

Anderson, William L., and Peggy L. Stewart. RELATIONSHIPS BETWEEN INORGANIC IONS AND THE DISTRIBUTION OF PHEASANTS IN ILLINOIS. *J. Wildl. Mgmt.* 33(2): 254-270, 1 fig. Apr. 1969. *WR 135: 58*

[Ill. Nat. Hist. Surv., Urbana.] The relationships between inorganic ions and the distribution of ring-necked pheasants *(Phasianus colchicus)* in Illinois were investigated by comparing concentrations of 24 elements in soil, grit, corn, and tissues of pheasants collected from good, fair, and poor pheasant range. Of the elements studied, suspicion is directed toward Ca, Mg, K, Cr, Co, and Mo as possibly influencing the distribution of pheasants in Illinois.--From abstr.

Bejosovec, Jaroslav. EXPANSION DES EDELFASANS *PHASIANUS COLCHICUS* L. IN DIE FELDLANDSCHAFT. [EXPANSION (DISPERSAL) OF THE PHEASANT *PHASIANUS COLCHICUS* L. INTO THE FIELD REGIONS.] *Vestnik Cesk. Spolecnosti Zool.* 31(2): 97-108. 1967. [From Biol. Abstr. 49(2), 1968. In German.] *WR 135: 58*

[Landwirtschaftliche Hochsch., Prague, Czechoslovakia.]

Buckmann, Carol A., editor. THE RUGGED RINGNECK OF MINNESOTA. *Minn. Dept. Conserv., Div. Game & Fish.* 23 p., illus. June 1967. *WR 135: 58*

A popular account of the reproductive behavior, habitat, and population cycle of the ring-necked pheasant. Includes tabulated results of fall harvests from 1924 to 1966.

Janda, Jiří. UŽITEČNOST MLADÝCH BAŽANTŮ *(PHASIANUS COLCHICUS* L.). [THE UTILITY OF YOUNG PHEASANT *(PHASIANUS COLCHICUS* L.).] *Práce Výzkumn. Ústav. Les. ČSSR* no. 30. p. 69-99, 4 figs. 1965. In Czech with Russian and English summ. *WR 135: 58*

[Výzkumný Ústav Lesa & Myslivosti, Zbraslav, Czechoslovakia.]

Labisky, Ronald F., Stuart H. Mann, and Rexford D. Lord, Jr. WEIGHTS AND GROWTH CHARACTERISTICS OF PHEASANT LENSES. *J. Wildl. Mgmt.* 33(2): 270-276, 1 fig. Apr. 1969. *WR 135: 58*

[Ill. Nat. Hist. Surv., Urbana.] Abstract: Variations in the dry weights of eye lenses of 130 known-age pheasants *(Phasianus colchicus)* indicated that weights could *not* be used to satisfactorily separate (1) juvenile cocks and juvenile hens into monthly age-classes; (2) juvenile cocks, older than 5 months, from adult cocks, and juvenile hens, older than 3 months, from adult hens; and (3) adults of either sex into yearly age-classes. Lens weights of adult cocks were, without exception, greater than those of adult hens. A multiple regression analysis revealed that both body weight and age exhibited a significant linear dependence with lens weight when the two variables were considered separately; when the two variables were considered together, lens weight was significantly dependent on age but not on body weight. The regression model for the lens weight versus age curve was $\log_{10}(y) = a + b\,(1/x+5)$ where y denotes lens weight and x denotes age.

GROUSE, PARTRIDGE, ETC.

Adams, James R., and George G. Gibson. *ANCYRACANTHOPSIS BENDELLI* N. SP. (ACUARIIDAE: SCHISTOROPHINAE) FROM PACIFIC COAST GROUSE, WITH OBSERVATIONS ON RELATED NEMATODE GENERA. *Canadian J. Zool.* 47(4): 619-626, 10 figs. July 1969. *WR 135: 58*

[Univ. British Columbia, Vancouver, British Columbia, Canada.]

Baziev, Zh. Kh. [PRESENT DISTRIBUTION AND NUMBER OF THE CASPIAN SNOW-PARTRIDGE *(TETRAOGALLUS CASPIUS)* IN TRANSCAUCASIA.] *Zool. Zhur.* 46(5): 778-781. 1967. [From Biol. Abstr. 49(9), 1968. In Russian with English summ.] *WR 135: 59*
[Moscow State Univ., Moscow, USSR.]

Janda, Jiří. UŽITEČNOST A POLNOHOSPODÁŘSKÝ VÝZNAM DOSPĚLÉ KOROPTVE POLNÍ *(PERDIX PERDIX* L.*).* [ECONOMIC AND AGRICULTURAL IMPORTANCE OF ADULT GRAY PARTRIDGE *(PERDIX PERDIX* L.*).*] *Vedecké Práce Výzkum. Úst. Les. a Myslivosti.* p. 125-143, 3 figs. 1957. In Czech with Russian and German summ. *WR 135: 59*
[Výzkumný Ústav Lesa & Myslivosti, Zbraslav, Czechoslovakia.]

Janda, J. TĚLESNÁ VÁHA A VÁHY A MÍRY NĚKTERÝCH ÚSTROJŮ DOSPĚLÉ KOROPTVE POLNÍ, *PERDIX PERDIX* (L.). [BODY WEIGHT, WEIGHTS AND MEASUREMENTS OF SOME ORGANS OF ADULT GRAY PARTRIDGE *(PERDIX PERDIX* (L.)*).*] *Zool. Listy* 7(21): 57-64, 5 figs. 1958. In Czech with Russian and German summ. *WR 135: 59*
[Výzkumný Ústav Lesa & Myslivosti, Zbraslav, Czechoslovakia.]

Janda, J. POTRAVA MLADÝCH KOROPTVÍ, *PERDIX PERDIX* (L.). [ON THE FOOD HABITS OF JUVENAL GRAY PARTRIDGE *(PERDIX PERDIX* (L.)*).*] *Zool. Listy* 8(22): 377-383, 1 fig. 1959. In Czech with German summ. *WR 135: 59*
[Výzkumný Ústav Lesa & Myslivosti, Zbraslav, Czechoslovakia.]

Janda, Jiří. SEZÓNNÍ VÝVOJ VAJEČNÍKŮ U KOROPTVE V PŘÍRODĚ. [SEASON(AL) DEVELOPMENT OF OVARIES OF PARTRIDGE IN NATURE.] *Práce Výzkumný Ústav Les. Hospodářství & Myslivosti* no. 33. p. 212-228, 6 figs. 1966. In Czech with Russian and English summ. *WR 135: 59*
[Výzkumný Ústav Lesa & Myslivosti, Zbraslav, Czechoslovakia.]

King, R. Dennis. SPRING AND SUMMER FOODS OF RUFFED GROUSE ON VANCOUVER ISLAND. *J. Wildl. Mgmt.* 33(2): 440-442. Apr. 1969. *WR 135: 59*
[Univ. British Columbia, Vancouver, Canada.] Abstract: Crop contents of 76 ruffed grouse *(Bonasa umbellus)* collected during spring and summer of 1957-1962 on Vancouver Island, British Columbia, were examined. The spring foods of adults were the leaves and fronds of several plant species, and by late summer mainly the fruits of salal *(Gaultheria shallon)* and other plants. The chicks fed heavily on insects during the first few weeks, but by late July their diet was predominantly plant material and resembled that of the adults. Summer foods were similar to those taken by blue grouse *(Dendragapus obscurus)* on the same areas.

McEwen, Lowell C., Donald B. Knapp, and Eugene A. Hilliard. PROPAGATION OF PRAIRIE GROUSE IN CAPTIVITY. *J. Wildl. Mgmt.* 33(2): 276-283, 5 figs. Apr. 1969. *WR 135: 59*
[Bur. Sport Fisheries & Wildl., Federal Center, Denver, Colo.] Abstract: A total of 375 sharp-tailed grouse *(Pedioecetes phasianellus)* and greater prairie chickens *(Tympanuchus cupido pinnatus)* have been reared in pens for use in pesticide toxicity studies. Maintenance techniques have been developed to keep parasites and disease at a minimum and encourage breeding. Eggs are incubated and hatched mechanically and chicks are started in indoor brooders, then moved to outdoor pens. Key features of our system are: (1) wire-floored pens to minimize disease hazards, (2) 30 square ft of floor space or more per adult grouse when kept in common cages, (3) varied diets meeting growth requirements for chicks and seasonal changes in requirements for adults, (4) a fresh water supply, and (5) dusting boxes to control ectoparasites.

Moss, Robert. A COMPARISON OF RED GROUSE *(LAGOPUS L. SCOTICUS)* STOCKS WITH THE PRODUCTION AND NUTRITIVE VALUE OF HEATHER *(CALLUNA VULGARIS).* *J. Animal Ecol.* 38(1): 103-122. Feb. 1969. *WR 135: 59*
[Nature Conservancy, Blackhall, Banchory, Kincardineshire, Scotland.] Conclusions and summary: At "rich" moors overlying relatively base-rich rocks the breeding densities of red grouse in spring were higher than was expected from the cover and age of the heather, and their breeding success in summer was consistently fair or good. At more typical "poor" moors overlying granite, breeding

densities were generally lower than at rich moors, and breeding success was sometimes poor. These differences between rich and poor moors could not be explained by differences in the amount of green shoots and flowers of heather (the birds' main food) produced annually, the amount available at the end of winter, or the amount of young heather. Heather at rich moors contained more phosphorus than at poor moors. Rich moors also supported a greater variety of vascular plants, including some minor grouse foods. These two factors may have improved the quality of the birds' diet and thus caused the better grouse performance at rich moors.

Sharpe, Roger Stanley. THE EVOLUTIONARY RELATIONSHIPS AND COMPARATIVE BEHAVIOR OF PRAIRIE CHICKENS. *Ph.D. thesis, Univ. Nebr.* 230 p. 1968. [From Dissertation Abstr. 29(7B), 1969.] *WR 135: 60*
"Tympanuchus cupido pinnatus, T. c. attwateri and *T. pallidicinctus."*

TURKEY

Hayden, Arnold H. OPPORTUNIST--YES, PICKY--NO! *Pa. Game News* 40(7): 25-29, illus. July 1969. *WR 135: 60*
Food habits of the turkey vary with the season and with the availability of foods. Fall, winter, and summer foods are tabulated. Diets of turkeys in southern Pa. are primarily vegetative, while northern turkeys include a high percentage of insects.

DOVES & PIGEONS

Goforth, Wayne Reid. SOCIAL ORGANIZATION AND TERRITORIES OF PENNED MOURNING DOVES *(ZENAIDURA MACROURA). Ph.D. thesis, Univ. Mo.* 114 p. 1968. [From Dissertation Abstr. 29(9B), 1969.] *WR 135: 60*

Ljunggren, Lars. SEASONAL STUDIES OF WOOD PIGEON POPULATIONS. II. GONADS, CROP GLANDS, ADRENALS AND THE HYPOTHALAMO-HYPOPHYSIAL SYSTEM. *Viltrevy* 6(2): 41-126, 25 figs. 1969. In English with Swedish summ. *WR 135: 60*
[Univ. Lund, Lund, Sweden.]

Rendahl, Hialmar. DIE ZUGVERHÄLTNISSE DER SCHWEDISCHEN RINGELTAUBEN *(COLUMBA PALUMBUS* L.) UND HOHLTAUBEN *(COLUMBA OENAS* L.): MIT BERÜCKSICHTIGUNG DER ERGEBNISSE DER FINNISCHEN UND NORWEGISCHEN BERINGUNGEN. [MIGRATION OF THE SWEDISH *COLUMBA PALUMBUS* L. AND *COLUMBA OENAS* L.: WITH CONSIDERATION OF THE RESULTS OF FINNISH AND NORWEGIAN BANDING OPERATIONS.] *Ark. Zool.* 18(3/4): 221-226. 1967. [From Biol. Abstr. 49(8), 1968. In German.] *WR 135: 60*

WATERFOWL

Ahlen, Ingemar. STUDIES ON THE DISTRIBUTION AND ECOLOGY OF THE LITTLE GREBE, *PODICEPS RUFICOLLIS* (PALL.), IN SWEDEN. *Vår Fågelvärld* Suppl. 4. p. 1-45, illus. 1966. [From Biol. Abstr. 49(1), 1968. In English with Swedish summ.] *WR 135: 60*

Atkinson-Willes, G. L., and J. C. Frith. TRENDS IN THE POPULATION OF BRITISH WINTERING DUCKS 1961-64. *16th Ann. Rept. Wildfowl Trust 1963-4.* p. 21-29, 5 figs. 1965. *WR 135: 60*
No species has shown any serious decline since 1963.

Aumees, L. E. [THE COMMON EIDER ON THE ISLANDS WEST OF THE ISLAND OF SAAREMAA.] In: *(Information on the conference for the study, conservation and breeding of the common eider, 1966.)* (Tartu). p. 3-4. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 12I408. In Russian.] *WR 135: 60*

Balat, Frantisek. LEGEFOLGE UND BRUTDAUER BEI DER STOCKENTE, *ANAS PLATYRHYNCHOS* L. [OVIPOSITION AND DURATION OF BREEDING OF THE MALLARD *ANAS PLATYRHYNCHOS* L.] *Zool. Listy* 16(2): 167-172. 1967. [From Biol. Abstr. 49(8), 1968. In German with English summ.] *WR 135: 61*
[Czechoslovak Acad. Sci., Brno, Czechoslovakia.]

Balat, Frantisek. OMKVALLS OCH MORGONFORFLYTTNINGAR HOS ANDER PA FALSTERBOHALVON (MEDDELANDEN FRAN FALSTERBO FAGELSTATION 35). [OBSERVATIONS ON THE EVENING- AND MORNING FLIGHTS OF (SWEDEN) WILD DUCKS (ANATINAE) ON THE FALSTERBO PENINSULA.] *Vår Fågelvärld* 26(2): 97-110, illus. 1967. [From Biol. Abstr. 49 (17), 1968. In Swedish.] *WR 135: 61*
[Czechoslovak Acad. Sci., Brno, Czechoslovakia.]

Balat, Frantisek. ZURBRUTBIONOMIE DER STOCKENTE, *ANAS PLATYRHYNCHOS* L., AUF DEM ZAMECKY-TEICH BEI LEDNICE (SUDMAHREN, TSCHECHOSLOWAKEI). [ON BROOD BIONOMY OF *ANAS PLATYRHYNCHOS* ON THE ZAMECKY-POND NEAR LEDNICE (SOUTH MORAVIA, CZECHOSLOVAKIA).] *Zool. Listy* 16(3): 269-278, illus. 1967. [From Biol. Abstr. 49(6), 1968. In German with English summ.] *WR 135: 61*
[Czechoslovak Acad. Sci., Brno, Czechoslovakia.]

Beale, C. J., and F. S. Wright. THE SLIMBRIDGE OBSERVATION HIDES. [*Ann. Rept.*] *Wildfowl* [*Trust*] 19: 137-143, 5 figs. 1968. *WR 135: 61*
Directions for constructing two observation blinds.

Beer, J. V., and P. Stanley. LEAD POISONING IN THE SLIMBRIDGE WILDFOWL COLLECTION. *16th Ann. Rept. Wildfowl Trust 1963-4.* p. 30-34, 1 fig. 1965. *WR 135: 61*
Post-mortem findings of 32 spp. affected.

Bell, Donald A. TREATMENT OF WILD WATERFOWL AFFLICTED WITH OIL-SOAKED FEATHERS. *Modern Game Breeding* 5(7): 13-14, illus. May 1969. *WR 135: 61*
[Sportsmen's Rd., Penns Grove, N.J.] Cleaning and feeding of scoters.

Bengtson, Sven-Axel. FIELD STUDIES ON THE HARLEQUIN DUCK IN ICELAND. *17th Ann. Rept. Wildfowl Trust 1964-5.* p. 79-94, 1 fig. 1966. *WR 135: 61*
Habitat selection, courtship, agonistic behavior, nest-site selection, incubation, and care of young by *Histrionicus histrionicus.*

Bengtson, Sven-Axel. INTER-SPECIFIC PAIRING IN SCAUP AND TUFTED DUCK. [*Ann. Rept.*] *Wildfowl* [*Trust*] 19: 61-63. 1968. *WR 135: 61*
[Lund Univ., Lund, Sweden.] *"Aythya marila* and *A. fuligula."*

Bianki, V. V. [THE REASONS FOR LONG-TERM CHANGES IN THE NUMBER OF EIDER NESTS IN THE KANDALAKSHA PRESERVE.] In: *(Information on the 1966 conference for the study, preservation, and breeding of the common eider.)* (Tartu). p. 5-7. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 11I403. Transl. of Russian abstr.] *WR 135: 61*

Björvall, A. THE HATCHING AND NEST-EXODUS BEHAVIOUR OF MALLARD. [*Ann. Rept.*] *Wildfowl* [*Trust*] 19: 70-80, 4 figs. 1968. *WR 135: 61*
[Univ. Stockholm, Stockholm, Sweden.] Discussion of methods for determining hatching and departure, and description of characteristic behavior of the female and the ducklings in the nest and at departure.

Boev, Nikolai. WILDFOWL AND WILDFOWLING IN BULGARIA. *16th Ann. Rept. Wildfowl Trust 1963-4.* p. 58-63. 1965. *WR 135: 61*
[Zool. Inst. Bulgarian Acad. Sci., Sofia, Bulgaria.] Drainage of marshes has greatly reduced habitat available for migrants. The number of hunters have increased from 36,000 to 100,000 in 25 years, while the harvest has dropped from 139,000 to 30,000.

Boyd, Hugh, editor. THE SIXTEENTH ANNUAL REPORT OF THE WILDFOWL TRUST 1963-4. Printed for *Wildfowl Trust* (Slimbridge, Gloucestershire, England) by *Berkshire Printing Co., Ltd.*, Reading, England. 136 p., 9 figs. + 16 pls. 1965. *WR 135: 62*

The first 20 pages are primarily a business report. The *Year-book for 1964* has two parts: *Research and conservation in Great Britain* (11 papers), and *Research and conservation overseas* (14 papers). Individual papers are listed separately in this issue of *WR*.

Boyd, Hugh, editor. THE SEVENTEENTH ANNUAL REPORT OF THE WILDFOWL TRUST 1964-5. Printed for *Wildfowl Trust* (Slimbridge, Gloucestershire, England) by *Berkshire Printing Co., Ltd.*, Reading, England. 124 p., 21 figs. + 32 pls. 1966. Price $3.00. *WR 135: 62*

Includes a business report and the *Year-book for 1965* with 15 papers. Photographs are grouped into two sections. Individual papers are listed separately in this issue of *WR*.

Boyd, Hugh, and M. A. Ogilvie, editors. THE EIGHTEENTH ANNUAL REPORT OF THE WILDFOWL TRUST 1965-66. Printed for *Wildfowl Trust* (Slimbridge, Gloucestershire, England) by *Berkshire Printing Co., Ltd.*, Reading, England. 164 p., 26 figs. + 16 pls. 1967. Price $3.10. *WR 135: 62*

With a business report and 19 papers in the *Year-book for 1966*. Photographs in a separate section at the end. Individual papers are listed separately in this issue of *WR*.

Boyd, H., and C. R. G. Campbell. A SURVEY OF THE DUCKS BREEDING AT LOCH LEVEN IN 1966. *18th Ann. Rept. Wildfowl Trust 1965-66.* p. 36-42, 2 figs. 1967. *WR 135: 62*

Nearly all the 705 nests were on one 105-acre island; 7 spp. were present.

Cooch, F. G. THE BREEDING BIOLOGY AND MANAGEMENT OF THE NORTHERN EIDER *(SOMATERIA MOLLISSIMA BOREALIS)* IN THE CAPE DORSET AREA, NORTHWEST TERRITORIES. *Wildl. Mgmt. Bull. (Ottawa) Ser.* II, 10: 5-68, illus. 1965. [From Biol. Abstr. 49(7), 1968.] *WR 135: 62*

Cook, W. A. BIRDS AT BOROUGH FEN 1965. *17th Ann. Rept. Wildfowl Trust 1964-5.* p. 30-32. 1966. *WR 135: 62*

Banding and nesting records for 1965.

Dennis, Roy H. CATCHING WILDFOWL BY ARTIFICIAL LIGHT. *17th Ann. Rept. Wildfowl Trust 1964-5.* p. 98-100. 1966. *WR 135: 62*

Waterfowl are dazzled by a bright light and hand-netted.

Dowsett, R. J., and A. de Vos. THE ECOLOGY AND NUMBERS OF AQUATIC BIRDS ON THE KAFUE FLATS, ZAMBIA. *16th Ann. Rept. Wildfowl Trust 1963-4.* p. 67-73. 1965. *WR 135: 62*

[Dept. Game & Fisheries, Chilanga, Zambia.]

Festetics, Antal, and Bernd Leisler. ECOLOGY OF WATERFOWL IN THE REGION OF LAKE NEUSIEDL, AUSTRIA, PARTICULARLY IN THE WORLD WILDLIFE FUND SEEWINKEL RESERVE. [*Ann. Rept.*] *Wildfowl* [*Trust*] 19: 83-95, 2 figs. 1968. *WR 135: 62*

[Univ. Vienna, Vienna, Austria.] The 18 spp. which are economically most important to the region are treated in detail, 10 spp. occurring in smaller numbers are briefly mentioned, and 21 spp. which are rare are listed.--From summ.

Gillham, Eric, James M. Harrison, and Jeffery G. Harrison. A STUDY OF CERTAIN *AYTHYA* HYBRIDS. *17th Ann. Rept. Wildfowl Trust 1964-5.* p. 49-65, 1 fig. 1966. *WR 135: 62*

"*Aythya ferina, A. fuligula, A. marila,* and *A. hyrcca* hybrids."

Glude, John B. THE EFFECT OF SCOTER DUCK PREDATION ON A CLAM POPULATION IN DABOB BAY, WASHINGTON. *Proc. Natl. Shellfish Assoc.* 55: 73-86, illus. 1967. [From Biol. Abstr. 49(5), 1968.] *WR 135: 63*
[U.S. Bur. Commercial Fisheries, Seattle, Wash.]

Hansson, Lennart. STUDIES ON THE ADAPTATION OF THE MALLARD *(ANAS PLATYRHYNCHOS)* TO URBAN ENVIRONMENTS. *Vår Fågelvärld* Suppl. 4. p. 95-140, illus. 1966. [From Biol. Abstr. 49(2), 1968. In English with Swedish summ.] *WR 135: 63*
[Univ. Lund, Lund, Sweden.]

Hori, John. THE DISPLAY FLIGHTS OF SHELDUCK. *16th Ann. Rept. Wildfowl Trust 1963-4.* p. 58. 1965. *WR 135: 63*
Short description of pairing display flights.

Hudec, Karel. AGE STRUCTURE AND MIGRATION OF THE CZECHOSLOVAK POPULATION OF THE MALLARD *(ANAS PLATYRHYNCHOS). Zool. Listy* 16(2): 145-166, illus. 1967. [From Biol. Abstr. 49(8), 1968.] *WR 135: 63*
[Inst. Vertebrate Zool., Czechoslovak Acad. Sci., Brno, Czechoslovakia.]

Hudec, Karel. MIGRATION OF THE CZECHOSLOVAKIAN POPULATIONS OF DABBLING DUCKS OF THE GENUS *ANAS. Zool. Listy* 16(4): 365-378. 1967. [From Biol. Abstr. 49(17), 1968.] *WR 135: 63*
[Inst. Vertebrate Zool., Czechoslovak Acad. Sci., Brno, Czechoslovakia.]

Jacoby, H., G. Knötzsch, and S. Schuster. PRACTTAUCHER *(GAVIA ARCTICA)* UND SINGSCHWAN *(CYGNUS CYGNUS)* AM BODENSEE. [THE ARCTIC LOON *(GAVIA ARCTICA)* AND THE WHOOPER SWAN *(CYGNUS CYGNUS)* ON LAKE CONSTANCE.] *Ornithol. Mitteil.* 21(1): 7-8. Jan. 1969. In German. *WR 135: 63*
[Beyerlestrasse 22, Konstanz, Germany.] Status during period 1954-1968.

Joensen, Anders Holm. WILDFOWL COUNTS IN DENMARK IN NOVEMBER 1967 AND JANUARY 1968--METHODS AND RESULTS. *Danish Rev. Game Biol.* 5(5): 1-72, 33 figs. 1968. In English with Danish and Russian summ. *WR 135: 63*
Results of aerial and ground surveys of Anatidae spp., *Fulica atra*, and *Phalacrocorax carbo.*

Johnsgard, Paul A. OBSERVATIONS ON SOME ABERRANT AUSTRALIAN ANATIDAE. *16th Ann. Rept. Wildfowl Trust 1963-4.* p. 73-83. 1965. *WR 135: 63*
[Univ. Nebr., Lincoln.] *"Malacorhynchus membranaceus, Stictonetta naevosa, Oxyura australis,* and *Biziura lobata."*

Johnsgard, Paul A. THE BIOLOGY AND RELATIONSHIPS OF THE TORRENT DUCK. *17th Ann. Rept. Wildfowl Trust 1964-5.* p. 66-74, 1 fig. 1966. *WR 135: 63*
[Univ. Nebr., Lincoln.] Environmental conditions, general behavior, food habits, breeding season, vocalization, social behavior, and display of the genus *Merganetta.*

Johnsgard, Paul A. OBSERVATIONS ON THE BEHAVIOUR AND RELATIONSHIPS OF THE WHITE-BACKED DUCK AND THE STIFF-TAILED DUCKS. *18th Ann. Rept. Wildfowl Trust 1965-66.* p. 98-107, 2 figs. 1967. *WR 135: 63*
[Univ. Nebr., Lincoln.] *"Thalassornis* and *Heteronetta."*

Johnstone, S. T. THE SLIMBRIDGE COLLECTION--THE FIRST 21 YEARS. [*Ann. Rept.*] *Wildfowl* [*Trust*] 19: 125-129. 1968. *WR 135: 63*
Annotated list of species presently at Slimbridge.

Jones, Robert D., Jr. RETURNS FROM STELLER'S EIDERS BANDED IN IZEMBEK BAY, ALASKA. *16th Ann. Rept. Wildfowl Trust 1963-4.* p. 83-85. 1965. *WR 135: 63*
[Aleutian Islands Natl. Wildl. Refuge, Cold Bay, Alaska.] Observations of a large wintering population from 1957-1964.

Jones, Robert D., Jr., and Dorothy M. Jones. THE PROCESS OF FAMILY DISINTEGRATION IN BLACK BRANT. *17th Ann. Rept. Wildfowl Trust 1964-5.* p. 75-78, 1 fig. 1966. *WR 135: 64*

[Aleutian Islands Natl. Wildl. Refuge, Cold Bay, Alaska.] Family groups arriving at Izembek Bay from the nesting grounds disintegrate before resuming southward migration.

Jung, Klaus. DIE BRANDGANS *(TADORNA TADORNA)* BRUTVOGEL UND UBERWINTERER BEI SALZGITTER. [*TADORNA TADORNA*, BREEDING AND HIBERNATING NEAR SALZGITTER.] *J. Ornithol.* 109(1): 22-24. 1968. [From Biol. Abstr. 49(17), 1968. In German.] *WR 135: 64*

Karpovich, V. N., and V. D. Kokhanov. [THE POPULATION SIZE AND SEASONAL DISPLACEMENT OF THE COMMON EIDER IN THE NORTHERN EUROPEAN PART OF THE RUSSIAN REPUBLIC, AND MEASURES FOR CONSERVING THE BIRDS.] In: *(Information on the 1966 meeting for the study, preservation, and raising of the common eider.)* (Tartu). p. 16-18. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 12I407.] *WR 135: 64*

Kear, Janet. THE REACTION OF CAPTIVE MALLARD TO GRAIN TREATED WITH A COMMERCIAL BIRD REPELLENT. *16th Ann. Rept. Wildfowl Trust 1963-4.* p. 47-48. 1965. *WR 135: 64*

Morkit, even at low concentrations, will repel ducks that are not particularly hungry.

Kear, Janet. FURTHER CONGENITAL MALFORMATION IN BIRDS BRED AT SLIMBRIDGE. *17th Ann. Rept. Wildfowl Trust 1964-5.* p. 35. 1966. *WR 135: 64*

The incidence of malformation is 0.24% for the 5-year period.

Kear, Janet. EXPERIMENTS WITH YOUNG NIDIFUGOUS BIRDS ON A VISUAL CLIFF. *18th Ann. Rept. Wildfowl Trust 1965-66.* p. 122-124, 1 fig. 1967. *WR 135: 64*

Ground-hatching species preferred the shallow side of the apparatus, while hole-hatching ducklings chose either side at random.

Kumari, E. V. [THE CONDITION OF THE STOCKS OF THE COMMON EIDER IN THE BALTIC AND NORTH SEAS AND IN THE NORTH ATLANTIC.] In: *(Information on the 1966 meeting for the study, preservation, and raising of the common eider.)* (Tartu). p. 22-27. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 11I402. Transl. of Russian abstr.] *WR 135: 64*

Lack, David. THE SIGNIFICANCE OF CLUTCH-SIZE IN WATERFOWL. *18th Ann. Rept. Wildfowl Trust 1965-66.* p. 125-128, 1 fig. 1967. *WR 135: 64*

[Botanic Garden, Oxford, England.] The average clutch of each species has been evolved in relation to the average availability of food for the female around the time of laying, modified by the relative size of the egg.

Lack, David. THE PROPORTION OF YOLK IN THE EGGS OF WATERFOWL. [*Ann. Rept.*] *Wildfowl* [*Trust*] 19: 67-69. 1968. *WR 135: 64*

[Botanic Garden, Oxford, England.] Summary: The yolk forms about two-fifths of the weight of the egg in waterfowl. This proportion does not differ significantly in species with eggs of different size proportionate to body-weight.

Leibovitz, Louis. THE COMPARATIVE PATHOLOGY OF DUCK PLAGUE IN WILD ANSERIFORMES. *J. Wildl. Mgmt.* 33(2): 294-303, 7 figs. Apr. 1969. *WR 135: 64*

[Cornell Univ., Duck Res. Lab., Eastport, N.Y.] Abstract: A review of the pathology of duck plague in domestic ducks and in the first detected outbreaks in North America in wild Anseriformes, confirmed by virus isolation, are described. The comparative pathology and frequency of lesions are reported from 15 mallards *(Anas platyrhynchos platyrhynchos)*, 45 black ducks *(Anas rubripes)*, a bufflehead *(Bucephala albeola)*, a greater scaup *(Aythya marila)*, a Canada goose *(Branta canadensis)*, and a mute swan *(Cygnus olor)*. The disease in mallards appears

similar to that observed in domestic ducks. In black ducks, the distinctive features of the disease are the relative absence of specific eruptive lesions on the mucosal surface of the esophagus and cloaca and the individualized intestinal response to the viral agent. In the two specimens of the subfamily Aythyinae (a bufflehead and a greater scaup), findings related to duck plague were absent. In a single immature Canada goose, the presence of lesions in lymphoid organs (bursa of Fabricius and thymus) and in the intestinal lymphoid discs, provide differential features. A severe inflammation of the intestinal tract and free blood throughout the intestines were findings that were outstanding in a single mute swan. The need to explore and report the experimental and field infections of Anseriformes and other species of birds that may be susceptible to this disease is discussed.

Matthews, G. V. T. SOME PARAMETERS OF 'NONSENSE' ORIENTATION IN MALLARD. *18th Ann. Rept. Wildfowl Trust 1965-66.* p. 88-97, 5 figs. 1967. *WR 135: 65*

Matthews, G. V. T., and M. A. Ogilvie. [ANNUAL REPORT OF THE] WILDFOWL [TRUST] 19. Printed for *Wildfowl Trust* (Slimbridge, Gloucestershire, England) by *Berkshire Printing Co., Ltd.*, Reading, England. 172 p., 21 figs. + 16 pls. 1968. Price $2.50. *WR 135: 65*

Wildfowl is a continuation of the *Annual Report* published each year by the Wildfowl Trust. The format and contents are only slightly changed; the "annual report" and the photographs are still included, but not as separate sections. Research reports and definitive articles are receiving primary emphasis. There is a section of "current reports" on banding projects and surveys conducted by the Wildfowl Trust. Individual papers are listed separately in this issue of *WR*.

McKinney, Frank. SPACING AND CHASING IN BREEDING DUCKS. *16th Ann. Rept. Wildfowl Trust 1963-4.* p. 92-106. 1965. *WR 135: 65*

The primary function of chasing, and the spacing resulting from it, is thought to be the dispersion of nests as an anti-predation mechanism.

McKinney, F. BREEDING BEHAVIOUR OF CAPTIVE SHOVELERS. *18th Ann. Rept. Wildfowl Trust 1965-66.* p. 108-121, 5 figs. 1967. *WR 135: 65*

Observations of 31 pairs in 0.15 and 0.19 acre flight pens.

McKinney, F. NEST-BUILDING MOVEMENTS PERFORMED BY MALE DUCKS. [*Ann. Rept.*] *Wildfowl* [*Trust*] 19: 64-66. 1968. *WR 135: 65*

[James Ford Bell Mus. Nat. Hist., Minneapolis, Minn.]

Mihelsons, H., J. Viksne, and G. Lejins. EXPERIENCE IN WATERFOWL MANAGEMENT UNDER THE CONDITIONS PREVAILING IN THE LATVIAN S.S.R. *18th Ann. Rept. Wildfowl Trust 1965-66.* p. 146-149. 1967. *WR 135: 65*

Suggestions for managing waterfowl populations in densely populated areas.

Morse, Thomas E., and Howard M. Wight. DUMP NESTING AND ITS EFFECT ON PRODUCTION IN WOOD DUCKS. *J. Wildl. Mgmt.* 33(2): 284-293, 7 figs. Apr. 1969. *WR 135: 65*

[Utah State Univ., Logan.] Abstract: The events, frequency, and effects of dump nesting (two or more hens laying eggs in the same nest box) are reported for a population of wood ducks *(Aix sponsa)* in Benton County, Oregon, during 1965-1967. Of 202 nests investigated, 120 were classified as dump. Dump nests contained a broad range of clutch sizes (6-48) with 51.7% having a clutch size of less than 15. No significant differences were found between normal and dump nests in rates of nest abandonment or nest success. Although hatchability of eggs in dump nests was consistently lower than that of eggs in normal nests, hatchability was positively correlated with clutch size, regardless of whether the nests were normal or dump. Dump nesting appeared to be mainly beneficial to production in the population studied. We estimate that dump nests contributed 31.5% more day-old ducklings into the population than would have been produced from an equal number of normal nests. Dump nesting in this study was not related to competition

for a restricted number of nest sites. In all years, there were more boxes available than there were nesting hens. In the last 2 years of the study, there were almost twice the number of boxes as hens, yet the frequency of dump nesting increased.

Ogilvie, M. A. BRITISH LITERATURE ON EUROPEAN WILDFOWL 1961-65. *17th Ann. Rept. Wildfowl Trust 1964-5.* p. 101-109. 1966. *WR 135: 66*

Onno, Sven. THE NUMBERS OF WATERFOWL IN ESTONIA. *16th Ann. Rept. Wildfowl Trust 1963-4.* p. 110-114, 1 fig. 1965. *WR 135: 66*
[Inst. Zool. & Bot., Acad. Sci. Estonian SSR.] About 27,000 pairs of ducks of 14 spp., 500 pairs of greylag geese, and 10 pairs of mute swans have bred annually in Estonia in recent years.

Onno, S. Kh. [THE ECOLOGY OF NESTING BY THE EIDER IN THE MOONZUND STRAIT (ESTONIA).] In: *(Information on the 1966 meeting for the study, conservation, and breeding of the common eider.)* (Tartu). p. 27-33. 1966. [From Biol. Abstr. 49(3), 1968, from Referat. Zhur., Biol., 1966, no. 12I406. Transl. of Russian abstr.] *WR 135: 66*

Owen, Ray Bucklin, Jr. ENERGY REQUIREMENTS OF BLUE-WINGED TEAL UNDER FREE-LIVING AND CAPTIVE CONDITIONS. *Ph.D. thesis, Univ. Ill.* 72 p. 1968. [From Dissertation Abstr. 29(7B), 1969.] *WR 135: 66*

Pettingill, Olin Sewall, Jr. KELP GEESE AND FLIGHTLESS STEAMER DUCKS IN THE FALKLAND ISLANDS. *Living Bird* 4: 65-78, 11 figs. 1965. *WR 135: 66*
[Cornell Univ., Ithaca, N.Y.] Observations on the behavior of *Chloëphaga hybrida* and *Tachyeres* spp.

Pitman, C. R. S. THE NESTING AND SOME OTHER HABITS OF *ALOPOCHEN, NETTAPUS, PLECTROPTERUS* AND *SARKIDIORNIS. 16th Ann. Rept. Wildfowl Trust 1963-4.* p. 115-121. 1965. *WR 135: 66*

Salomonsen, Finn. THE MOULT MIGRATION. [*Ann. Rept.*] *Wildfowl* [*Trust*] 19. p. 5-24, 3 figs. 1968. *WR 135: 66*
[Univ. Zool. Mus., Universitetsparken 15, Copenhagen, Denmark.] Description of the moult migrations of Anserini *(Anser* and *Branta* spp.), Tadornini, Anatini, Aythyini, Somaterini, and Mergini.

Savage, Christopher. WHITE-HEADED DUCKS IN WEST PAKISTAN. *16th Ann. Rept. Wildfowl Trust 1963-4.* p. 121-123. 1965. *WR 135: 66*
"Oxyura leucocephala."

Savage, Christopher. WILDFOWL SURVEY IN SOUTH-WEST ASIA: A PROGRESS REPORT. *16th Ann. Rept. Wildfowl Trust 1963-4.* p. 123-125. 1965. *WR 135: 66*

Savage, Christopher. WILDFOWL SURVEY IN SOUTH-WEST ASIA: PROGRESS IN 1965. *17th Ann. Rept. Wildfowl Trust 1964-5.* p. 45-48, 2 figs. 1966. *WR 135: 66*
Information and observations have been collected from Jordan, Iraq, Iran, Pakistan, and India.

Savage, Christopher. WILDFOWL SURVEY IN SOUTH-WEST ASIA: PROGRESS IN 1966. *18th Ann. Rept. Wildfowl Trust 1965-66.* p. 150-152. 1967. *WR 135: 66*
Reports from six countries.

Schroeder, Charles H. RESULTS OF THE 1968 WATERFOWL HUNTING SEASON. *N. Dak. Outdoors* 31(12): 20. June 1969. *WR 135: 66*
The 1968 duck harvest was 235,435, a decrease of 26% from 1967. The goose harvest of 36,650 was the lowest since 1962.

Siegfried, W. R. TRAPPING AND RINGING OF EGYPTIAN GEESE AND AFRICAN SHELDUCK AT VOGELVLEI, CAPE. *Ostrich* 38(3): 173-178, illus. 1967. [From Biol. Abstr. 49(11), 1968.] *WR 135: 67*
[Cape Dept. Nat. Conserv., Stellenbosch, South Africa.]

Stanton, Philip B. OIL SLICKS AND THE CARE OF WATERFOWL. *Modern Game Breeding* 5(7): 10-12, 27, illus. May 1969. *WR 135: 67*
[Upton, Mass.] Suggestions for cleaning, keeping, feeding, and treating waterfowl victims of oil slicks.

Storer, Robert W. THE COLOR PHASES OF THE WESTERN GREBE. *Living Bird* 4: 59-63, 1 fig. 1965. *WR 135: 67*
[Univ. Mich. Mus. Zool., Ann Arbor.] The proportion of light-phase and dark-phase birds may be used to characterize a population and to identify it on breeding and wintering grounds.

Tamisier, Alain. DENOMBREMENTS DE SAUVAGINE SUR LE LITTORAL MEDITERRANEEN FRANCAIS. [WILDFOWL COUNTS ON THE FRENCH MEDITERRANEAN SEACOAST (DUCKS, COOTS, WINTERING AREA).] *Alauda* 34(4): 279-296, illus. 1966. [From Biol. Abstr. 49 (8), 1968. In French.] *WR 135: 67*
[Sta. Biol., Tour Valat, Le Sombre, Rhone, France.]

Vermeer, Kees. SOME ASPECTS OF THE BREEDING OF THE WHITE-WINGED SCOTER AT MIQUELON LAKE, ALBERTA. *Blue Jay* 27(2): 72-73, 1 fig. June 1969. *WR 135: 67*
[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] Tabulation of egg-laying interval and of egg size of *Melanitta deglandi*.

Wainwright, C. B. RESULTS OF WILDFOWL RINGING AT ABBERTON RESERVOIR, ESSEX 1949 TO 1966. *18th Ann. Rept. Wildfowl Trust 1965-66.* p. 28-35, 2 figs. 1967. *WR 135: 67*
Of the 37,924 ducks banded, 70% were teal and 21% were mallards.

Weller, Milton W. PLUMAGES AND WING SPURS OF TORRENT DUCKS *MERGANETTA ARMATA*. [*Ann. Rept.*] *Wildfowl* [*Trust*] 19. p. 33-40, 3 figs. 1968. *WR 135: 67*
[Iowa State Univ., Ames.]

Wintle, D. S. ADOPTION OF YOUNG BY VERSICOLOR TEAL AND OTHER WILDFOWL. [*Ann. Rept.*] *Wildfowl* [*Trust*] 19: 81-82. 1968. *WR 135: 67*
[The Glen, Vine Road, Clent, Worcestershire, England.] The versicolor teal enticed a brood of ducklings away from a bantam hen, and successfully reared them.

Worms, M. J., and W. A. Cook. BLOOD PARASITES OF DUCKS IN THE BRITISH ISLES. *17th Ann. Rept. Wildfowl Trust 1964-5.* p. 33-34. 1966. *WR 135: 67*
Microfilariae were found in teal, smew, and pintail; leucocytozoon were found in scaup, wigeon, pochard and teal.

SWANS & GEESE

Boyd, Hugh. BREEDING SUCCESS OF WHITE-FRONTED GEESE FROM THE NENETS NATIONAL AREA. *16th Ann. Rept. Wildfowl Trust 1963-4.* p. 34-40. 1965. *WR 135: 67*

Boyd, Hugh. BARNACLE GEESE IN THE WEST OF SCOTLAND, 1957-1967. [*Ann. Rept.*] *Wildfowl* [*Trust*] 19: 96-107, 4 figs. 1968. *WR 135: 67*
[Canadian Wildl. Serv., Ottawa, Canada.] Results of yearly aerial surveys.

Burton, P. J. K. BRENT GEESE IN WESTERN EUROPE DURING THE WINTERS OF 1962-63 AND 1963-64. *16th Ann. Rept. Wildfowl Trust 1963-4.* p. 40-43. 1965. *WR 135: 67*

Dorward, D. F., and G. M. Pizzey. BREEDING OF THE CAPE BARREN GOOSE ON THE ANSER AND GLENNIE ISLANDS, VICTORIA, AUSTRALIA. *16th Ann. Rept. Wildfowl Trust 1963-4.* p. 64-67. 1965. *WR 135: 68*
[Monash Univ., Victoria, Australia.] History of the species and proposals for protection and conservation, especially at this new breeding location.

Gladstone, Peter, and Charles Martell. SOME FIELD NOTES ON THE BREEDING OF THE GREATER KELP GOOSE. [*Ann. Rept.*] *Wildfowl* [*Trust*] 19: 25-31. 1968. *WR 135: 68*
[Shrewsbury School, Shropshire, England.] Description of habitat, eggs, clutch size, goslings, behavior, and non-breeding movements of *Chloëphaga hybrida malvinarum.*

Hardy, D. E. OBSERVATIONS ON THE PINK-FOOTED GOOSE IN CENTRAL ICELAND, 1966. *18th Ann. Rept. Wildfowl Trust 1965-66.* p. 134-141, 1 fig. 1967. *WR 135: 68*
Details of food, behavior, and time of moulting of non-breeding birds are given.

Harrison, J. G., and M. A. Ogilvie. IMMIGRANT MUTE SWANS IN SOUTH-EAST ENGLAND. *18th Ann. Rept. Wildfowl Trust 1965-66.* p. 85-87. 1967. *WR 135: 68*

Kear, Janet. THE ASSESSMENT BY GRAZING TRIAL OF GOOSE DAMAGE TO GRASS. *16th Ann. Rept. Wildfowl Trust 1963-4.* 1965. *WR 135: 68*
Geese caused no discernable damage to young grass in early autumn.

Lebret, T. THE PROSPECTS FOR WILD GEESE IN THE NETHERLANDS. *16th Ann. Rept. Wildfowl Trust 1963-4.* p. 85-91. 1965. *WR 135: 68*
Drainage and reallotment programs endanger a number of roosts.

MacInnes, C. D., J. P. Prevett, and H. A. Edney. A VERSATILE COLLAR FOR INDIVIDUAL IDENTIFICATION OF GEESE. *J. Wildl. Mgmt.* 33(2): 330-335, 2 figs. Apr. 1969. *WR 135: 68*
[Univ. Western Ontario, London, Ontario, Canada.] Abstract: The construction and use of an aluminum collar colored and lettered with "Scotch Brand" plastic film tape are described. Problems were encountered when these collars were applied to blue geese *(Chen caerulescens).* Advantages and disadvantages of plastic and aluminum collars are discussed.

Minton, C. D. T. PAIRING AND BREEDING OF MUTE SWANS. [*Ann. Rept.*] *Wildfowl* [*Trust*] 19: 41-60. 1968. *WR 135: 68*
[65 St. John's Hill, Lichfield, Staffordshire, England.] Based on six years of research, the report includes behavior of breeding and non-breeding swans, pair bonds, divorce and change of mates, breeding success, and nesting habitat.

Norderhaug, M., M. A. Ogilvie, and R. J. F. Taylor. BREEDING SUCCESS OF GEESE IN WEST SPITSBERGEN, 1964. *16th Ann. Rept. Wildfowl Trust 1963-4.* p. 106-110, 1 fig. 1965. *WR 135: 68*
"Branta leucopsis, B. bernicla hrota, and *Anser brachyrhynchus."*

Ogilvie, M. A. WHITE-FRONTED GEESE AT THE NEW GROUNDS, 1946-47 TO 1963-64. *17th Ann. Rept. Wildfowl Trust 1964-5.* p. 27-29, 3 figs. 1966. *WR 135: 68*
Frequent counts have been made for the past 18 years. The figures have been tabulated to show changes and trends in the numbers and seasonal behavior of the birds.

Ogilvie, M. A. POPULATION CHANGES AND MORTALITY OF THE MUTE SWAN IN BRITAIN. *18th Ann. Rept. Wildfowl Trust 1965-66.* p. 64-73, 2 figs. 1967. *WR 135: 68*

Perrins, C. M., and C. M. Reynolds. A PRELIMINARY STUDY OF THE MUTE SWAN, *CYGNUS OLOR. 18th Ann. Rept. Wildfowl Trust 1965-66.* p. 74-84, 3 figs. 1967. *WR 135: 68*
Annual cycle, eggs and young, survival, and causes of mortality.

Philippona, Jules. GEESE IN COLD WINTER WEATHER. *17th Ann. Rept. Wildfowl Trust 1964-5.* p. 95-97. 1966. *WR 135: 69*
Roosting and feeding behavior will change during severe cold spells.

Philippona, Jules, and Tom Lebret. GEESE ON THE HORTOBÁGY, AUTUMN 1966. *18th Ann. Rept. Wildfowl Trust 1965-66.* p. 129-133, 1 fig. 1967. *WR 135: 69*
Observations of *Anser anser, A. albifrons, A. erythropus,* and *Branta ruficollis.*

Pollard, D. F. W., and P. Walters-Davies. A PRELIMINARY STUDY OF THE FEEDING OF THE GREENLAND WHITE-FRONTED GOOSE *ANSER ALBIFRONS FLAVIROSTRIS* IN CARDIGANSHIRE. [*Ann. Rept.*] *Wildfowl* [*Trust*] 19: 108-116, 3 figs. 1968. *WR 135: 69*
[Petawawa Forest Expt. Sta., Chalk River, Ontario, Canada.] Discussion of the survey of vegetation at two known feeding areas, and of the feeding habits of the geese.

Raveling, Dennis G. ROOST SITES AND FLIGHT PATTERNS OF CANADA GEESE IN WINTER. *J. Wildl. Mgmt.* 33(2): 319-330, 4 figs. Apr. 1969. *WR 135: 69*
[Canadian Wildl. Serv., 114-A Garry Street, Winnipeg, Manitoba, Canada.]
Abstract: Observation of a large wintering flock of Canada geese *(Branta canadensis interior)* revealed the existence of relatively exclusive subflocks which consistently utilized specific areas for roosting and maintained recognizable patterns of flight direction. Roost and feed-field locations of radio-marked geese showed that consistent patterns were a result of habitual use of areas by families whereas single geese were more variable. Habitual patterns are apparently motivated by fear of unfamiliar situations and function to enable family members to reunite after separation occurs, to aid efficient use of food, and to minimize the amount and intensity of aggressive conflicts within a flock. Roost and flight patterns of singles varied because of their following nature and submissive rank position within the flock. It is suggested that some subflocks represent a continued association of geese from the same local nesting area rather than just local stratification after migration. Subflock formation in some cases could affect local (or even total) harvest and interpretation of banding and other sampling data in the study of goose populations.

Raveling, Dennis G. SOCIAL CLASSES OF CANADA GEESE IN WINTER. *J. Wildl. Mgmt.* 33(2): 304-318, 2 figs. Apr. 1969. *WR 135: 69*
[Canadian Wildl. Serv., 114-A Garry Street, Winnipeg, Manitoba, Canada.]
Abstract: Seventy-seven Canada geese *(Branta canadensis interior)* were marked with transmitters, nasal disks, and dye to allow recording of their locations and observation of their behavior during winter. Marked geese included all or parts of 10 families, 2 pairs, and 35 yearlings. Behavior was not substantially affected by marking. Families remained intact all winter and reassembled if separation occurred. Of 26 yearlings whose social status was identified, 19 were singles, 4 were members of families, 2 were a sibling pair, and 1 was paired. Two single yearlings were closely associated in locations and movements. Bonds among adult and immature survivors in families disrupted by mortality did not appear to be affected. Yearlings in families were probably more loosely attached to the parents than were immatures.

Roberts, E. L. MOVEMENTS AND FLOCK BEHAVIOUR OF BARNACLE GEESE ON THE SOLWAY FIRTH. *17th Ann. Rept. Wildfowl Trust 1964-5.* p. 36-45, 1 fig. 1966. *WR 135: 69*
The geese react most often to passing aircraft, moderately often to man, and least often to other birds and farm stock. Most daylight hours are spent feeding.

Rochard, J. B. A., and Janet Kear. A TRIAL TO INVESTIGATE THE REACTIONS OF SHEEP TO GOOSE DROPPINGS ON GRASS. [*Ann. Rept.*] *Wildfowl* [*Trust*] 19: 117-119. 1968. *WR 135: 69*
[Agr. Sci. Serv., East Craigs, Edinburgh, Scotland.] Palatability is lowered by fouling, but fouled pasture may still be grazed in some circumstances.

Scott, Peter. THE BEWICK'S SWANS AT SLIMBRIDGE. *17th Ann. Rept. Wildfowl Trust 1964-5.* p. 20-26, 10 figs. 1966. *WR 135: 70*
The face patterns of swans can be used to recognize individuals, and to describe them to others.

Siegfried, W. R. INCUBATION OF EGGS BY THE EGYPTIAN GOOSE *(ALOPOCHEN AEGYPIACUS). Ostrich* 38(4): 283. 1967. [From Biol. Abstr. 49(17), 1968.] *WR 135: 70*
[Univ. Cape Town, Cape Town, South Africa.]

Sutherland, Charles A., and Donald S. McChesney. SOUND PRODUCTION IN TWO SPECIES OF GEESE. *Living Bird* 4: 99-106, 4 figs. 1965. *WR 135: 70*
[Univ. Md., College Park.]

Uspenski, S. M. THE GEESE OF WRANGEL ISLAND. *16th Ann. Rept. Wildfowl Trust 1963-4.* p. 126-129. 1965. *WR 135: 70*
Colony of approximately 400,000 breeding *Anser c. caerulescens.* Nesting density, clutch size, and brood size data are discussed.

Young, J. G. NESTS AND EGGS OF GREYLAG GEESE IN GALLOWAY. *16th Ann. Rept. Wildfowl Trust 1963-4.* p. 54-55. 1965. *WR 135: 70*
Results of 18 clutches at two locations.

CRANES, RAILS, SHOREBIRDS

Bagg, Aaron M. FACTORS AFFECTING THE OCCURRENCE OF THE EURASIAN LAPWING IN EASTERN NORTH AMERICA. *Living Bird* 6: 87-121, 13 figs. 1967. *WR 135: 70*
[Dover, Mass.] An analysis of two trans-Atlantic flights, Dec. 1927 and Jan. 1966, of *Vanellus vanellus.* A primary factor in the initiation of such flights is the response of wintering lapwings to severely cold winter in western Europe.--From summ.

Benning, Walter E. SURVEY OF GREAT BLUE HERONRIES 1964-1968. *Kingbird* 19(2): 85-90. May 1969. *WR 135: 70*
[R.D. 1, Clyde, N.Y.] Tabulated results of a 5-year survey in upstate New York, giving the active nests, number of young, and type of habitat for 41 heronries.

Coulter, Malcolm. MORTALITY RATES IN DIFFERENT SIZED BROODS OF WESTERN GULLS. *Point Reyes Bird Observatory Bull.* 12. p. 16-18, 2 figs. May 1969. *WR 135: 70*
Brood sizes were fairly stable after they had been reduced to 2.0 chicks per nest.--From summ.

De V. Little, Jeanne. SOME ASPECTS OF THE BEHAVIOUR OF THE WATTLED PLOVER *ARFIBYX SENEGALLUS* (LINNAEUS). *Ostrich* 38(4): 259-280. 1967. [From Biol. Abstr. 49(17), 1968.] *WR 135: 70*
[P.O. Box 76, Carolina, Transvaal, South Africa.]

Emlen, John T., and Don E. Miller. PACE-SETTING MECHANISMS OF THE NESTING CYCLE IN THE RING-BILLED GULL. *Behaviour* 33(3-4): 237-261, 4 figs. 1969. In English with German summ. *WR 135: 70*
[Wash. State Univ., Pullman.] The data suggest: The pace-setting mechanisms of the breeding cycle switch from internal (hormonal) to external (embryo and chick development) regulators early in the incubation phase of the cycle. Changes in parental activity at hatching are quantitatively uniform and are triggered by non-specific stimuli associated with chicks. Changes in parental activity after the second day are quantitatively regulated by changing stimuli associated with growing chicks.--From summ.

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[Univ. Western Ontario, London, Ontario, Canada.] Peripheral birds showed higher discrimination in foraging sites than central birds. Cardinals in both regions showed strong discrimination among habitat features for singing and foraging. In the peripheral region, cardinals showed strong preference for non-coniferous song perches, and either actively avoided coniferous foliage or preferred other types for foraging. All nests were in coniferous foliage. Discrimination between foliage types was not so marked in the central region, where conifers occurred less frequently. Throughout its range, the cardinal requires suitable woody cover for nesting. There is evidence that males prefer high song perches, but height seems less important than conspicuousness.--From abstr.

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"Turdus pilaris."

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[St. Peter's School, Texaco Trinidad Inc., Pointe-A-Pierre, Trinidad.] *"Spiza americana."*

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[Brodermannsweg 43A, Hamburg, Germany.]

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Haneda, Kenzo, and Hidehiko Ushiyama. [LIFE HISTORY OF THE RED-CHEEKED MYNA *(STURNIS PHILIPPENSIS)* I, BREEDING SEASON (1) A. BREEDING CYCLE: BREEDING PREPARATION, NEST BUILDING, COPULATION, INCUBATION, CHICK RAISING, AND FLEDGING.] *Japanese J. Ecol.* 16(6): 225-235, illus. 1966. [From Biol. Abstr. 49(3), 1968. In Japanese with English summ.] *WR 135: 77*
[Shinshu Univ., Nagano, Japan.]

Howard, Wilfred I. TWO MOCKINGBIRDS, FIVE NESTS, 15+ EGGS--NO YOUNG FLEDGED. *Kingbird* 19(2): 94. May 1969. *WR 135: 77*
[610 Coburn St., Elmira, N.Y.] The mockingbird made six nesting attempts; each time the eggs or young disappeared.

Kear, Janet. NOTES OF THE EGGS AND DOWNY YOUNG OF *THALASSORNIS LEUCONOTUS*. *Ostrich* 38(4): 227-229. 1967. [From Biol. Abstr. 49(17), 1968.] *WR 135: 77*
[Wildfowl Trust, Slimbridge, Gloucester, England.]

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[Smithsonian Inst., Washington, D.C.] *"Puffinus puffinus newelli."*

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[Augustana Coll., Sioux Falls, S. Dak.] Behavior of the male and female *Wilsonia canadensis* during incubation.

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[Ul. Gen. Sikorskiego 28/10, Leszno, Poland.]

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[Univ. Aberdeen, Culterty Field Sta., Newburgh, Aberdeenshire, Scotland.] *"Sula sula."*

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[Tokyo Univ. Fish., Tokyo, Japan.]

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[Carnegie Mus., Pittsburgh, Pa.] Two species of the cuckoo genus *Centropus* are unlike one another in overlap zones, but are similar where each occurs alone.

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[Inst. Ecol., Nowy Świat 72, Warsaw, Poland.]

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[Breslauer Strasse 2, Goslar, Germany.]

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[East London Mus., London, England.]

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[CSIRO, Box 109, Canberra, Australia.]

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[Univ. Fla., Gainesville.] *"Struthio camelus."*

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[Univ. Bristol, Bristol, England.] A discussion of behavior and displays of the booby pair on or near the nest-site under the following conditions: out-of-contact range, meeting after a separation, at sustained close proximity, and when they are moving apart. Saluting (a male-specific behavior) is considered in detail.--From summ.

Stewart, Robert M. THE WILSON'S WARBLER AT POINT REYES. *Point Reyes Bird Observatory Bull.* 12. p. 2-9, 9 figs. May 1969. *WR 135: 79*
Data on 388 banded birds and 48 recaptures. Includes spring and fall migration, molt and fat development, breeding season, sex criteria, and wing measurements.

Vanzolini, P. E. NOTES ON THE NESTING BEHAVIOR OF *PODOCNEMIS EXPANSA* IN THE AMAZON VALLEY (TESTUDINES, PELOMEDUSIDAE). *Papeis Avulsos Zool. Sao Paulo* 20 (17): 191-215, illus. 1967. [From Biol. Abstr. 49(3), 1968.] *WR 135: 79*

Vespremeanu, Emil. LOPĂTARUL *(PLATALEA LEUCORODIA* L.*)*, MONUMENT AL NATURII. RĂSPÎNDIRE, BIOLOGIE, OCROTIRE. [THE WHITE SPOONBILL *(PLATALEA LEUCORODIA* L.*)*, MONUMENT TO NATURE. DISTRIBUTION, BIOLOGY, PROTECTION.] *Ocrotirea Naturii* 12 (2): 181-192, 6 figs. 1968. In Romanian with French summ. *WR 135: 79*
[Univ. Bucharest, Bucharest, Romania.]

Williams, Lovett E., Jr., and Larry Martin. NESTING STATUS OF THE BROWN PELICAN IN FLORIDA IN 1968. *Quart. J. Fla. Acad. Sci.* 31(2): 130-140, 1 fig. June 1968. *WR 135: 79*
[Fla. Game & Fresh Water Fish Comm., Gainesville.] Preliminary aerial surveys in 1966 and 1967 led to a thorough counting of pelican nests in early May 1968. Twenty-four active colonies containing approximately 6,705 nests were counted. All were on small islands. Less than one-third of these were on the Atlantic coast. There is evidence of colony location shifts from year to year, especially in the Gulf. The lesser number of colonies, larger average number of nests per colony, and less frequent colony location shifts on the Atlantic side of Florida suggest a possible shortage of suitable nesting habitat there as compared to the Gulf coast.--From summ.

Auffenberg, Walter, and W. G. Weaver, Jr. *GOPHERUS BERLANDIERI* IN SOUTHEASTERN TEXAS. *Bull. Fla. State Mus., Biol. Sci.* 13(3): 141-203, 25 figs. 1969. Price 85¢. *WR 135: 80*

[Univ. Fla., Gainesville.] Synopsis: *Gopherus berlandieri* populations on isolated clay dunes near the mouth of the Rio Grande were studied intermittantly from 1961 to 1967. Reproduction, growth, habitat, movement, activity, shelter, food, and predation were investigated. The most important contribution of the study is the demonstrated interpopulational behavioral variability in shelter construction and use, activity range, and food preference. The geological and vegetational histories of the habitats of each population are correlated with the behavioral differences observed.

Bagdanov, O. P. [ECOLOGY OF REPTILES OF CENTRAL ASIA.] *Nauka* (Tashkent). 259 p., illus. 1965. Price 1 ruble 32 kopecks. [From Biol. Abstr. 49(12), 1968, from Referat. Zhur., Biol., 1966, no. 10I228K. In Russian.] *WR 135: 80*

Barbour, Roger W., James W. Hardin, James P. Schafer, and Michael J. Harvey. HOME RANGE, MOVEMENTS, AND ACTIVITY OF THE DUSKY SALAMANDER, *DESMOGNATHUS FUSCUS*. *Copeia* 1969(2): 293-297, 3 figs. 3 June 1969. *WR 135: 80*

[Univ. Ky., Lexington.] Radioisotope tagging and tracing techniques revealed the average home range size of five *Desmognathus fuscus* with 40 or more points of detection and observed over a period of 32-59 days, to be 48.4 m^2 (range, 25.2 m^2-114.5 m^2). Of 14 salamanders studied, the maximum movement in a 24 hr period was 17.1 m (in 10 hr 25 min). Most recorded movements were of distances less than 2 m. Most movements began between 0600 and 0900 and between 2100 and 2400. The salamanders had peaks of activity at 0800 and 2300.--From abstr.

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[Queen's Univ., Kingston, Ontario, Canada.] Over the long term, high temperatures are always coincident with high peripheral parasitaemia and vice versa; over the short term, increases in temperature bring about a corresponding increase in parasite level, and vice versa. Present results suggest an optimal host-vector contact for basking frogs.

Barrio, Avelino. INFLUENCIA DE LA TEMPERATURA SOBRE EL CANTO NUPCIAL DE *HYLA SQUALIROSTRIS* A. LUTZ (ANURA, HYLIDAE). [INFLUENCE OF TEMPERATURE ON "MATING CALL" OF *HYLA SQUALIROSTRIS* A. LUTZ (ANURA, HYLIDAE).] *Physis Rev. Asoc. Argentina Cienc. Nat.* 24(67): 137-142. 1963. [From Biol. Abstr. 49(21), 1968. In Spanish.] *WR 135: 80*

[Inst. Nacl. Microbiol., Buenos Aires, Argentina.]

Bourgat, Robert. INTRODUCTION À L'ÉTUDE ÉCOLOGIQUE SUR LE CAMÉLÉON DE L'ÎLE DE LA RÉUNION, *CHAMAELEO PARDALIS* CUV. [INTRODUCTION TO THE ECOLOGICAL STUDY ON CHAMELEON OF REUNION ISLAND, (INDIAN OCEAN), *CHAMAELEO PARDALIS.*] *Vie Milieu* 18 (1C): 221-230, illus. 1967. [From Biol. Abstr. 49(22), 1968. In French with English summ.] *WR 135: 80*

[Lab. Zool. Fac. Sci., Tananarive, Madagascar.]

Brenner, Fred J. THE ROLE OF TEMPERATURE AND FAT DEPOSITION IN HIBERNATION AND REPRODUCTION IN TWO SPECIES OF FROGS. *Herpetologica* 25(2): 105-113, 2 figs. 17 June 1969. *WR 135: 80*

[Thiel Coll., Greenville, Pa.] Abstract: The influence of environmental temperature and the periodic storage and utilization of body fat on hibernation and reproduction was investigated in the green frog, *Rana clamitans*, and the cricket frog, *Acris crepitans*. Temperature influenced the entrance and emergence of frogs from hibernation. The periodic storage and utilization of body fat was correlated with the reproductive cycle of both species.

Bruce, Richard Conrad. LIFE HISTORY STUDIES OF THE SALAMANDERS OF THE GENUS *PSEUDOTRITON* (CAUDATA: PLETHODONTIDAE). *Ph.D. thesis, Duke Univ.* 235 p. 1968. [From Dissertation Abstr. 29(9B), 1969.] *WR 135: 81*
"Pseudotriton ruber and *P. montanus."*

Bustard, H. Robert. THE POPULATION ECOLOGY OF THE GEKKONID LIZARD *(GEHYRA VARIEGATA* (DUMÉRIL & BIBRON)) IN EXPLOITED FORESTS IN NORTHERN NEW SOUTH WALES. *J. Animal Ecol.* 38(1): 35-51, 7 figs. Feb. 1969. *WR 135: 81*
[Australian Natl. Univ., Canberra, Australia.]

Bustard, H. Robert, and Peter Greenham. NESTING BEHAVIOR OF THE GREEN SEA TURTLE ON A GREAT BARRIER REEF ISLAND. *Herpetologica* 25(2): 93-102, 2 figs. 17 June 1969. *WR 135: 81*
[Australian Natl. Univ., Canberra, Australia.] Abstract: The nesting sequence of green turtles on Heron Island is described and divided into nine stages. Behavior of the Heron Island turtles differs from that described for other populations in 1) the absence of "smelling" behavior in new arrivals at the nesting ground and individuals ascending the beach, 2) minor details of digging activity, 3) taking longer to excavate body pits and egg chambers and to lay eggs.

Chugunov, Yu. D. [POLYPHASE RHYTHM OF THE DIURNAL ACTIVITY OF *RANA TEMPORARIA.*] *Zool. Zhur.* 45(11): 1692-1697, illus. 1966. [From Biol. Abstr. 49(2), 1968. In Russian with English summ.] *WR 135: 81*
[Moscow State Univ., Moscow, USSR.]

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[Univ. Khartoum, Khartoum, Sudan.]

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[Natl. Mus. Canada, Ottawa, Ontario, Canada.]

Dowling, Herndon G. RELATIONS OF SOME AFRICAN COLUBRID SNAKES. *Copeia* 1969 (2): 234-242, 2 figs. 3 June 1969. *WR 135: 81*
[Am. Mus. Nat. Hist., New York, N.Y.]

Dowling, H. G., I. Gilboa, I. Palser, and T. Shaman. CURRENT HERPETOLOGICAL TITLES, VI: 1968-69. *Herpetol. Rev.* no. 7. p. 11-36. June 1969. *WR 135: 81*
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Eliseeva, V. I. [THE LOWER TERRESTRIAL VERTEBRATES OF THE CENTRAL CHERNOZEMN NATIONAL FOREST (USSR).] *Trudy Tsent. Chernozem. Gos. Zapoved.* 10: 83-87. 1967. [From Biol. Abstr. 49(19), 1968, from Referat. Zhur., Biol., 1968, no. 11319. Transl. of Russian abstr.] *WR 135: 81*

Feuer, Robert C. AILMENTS OF CAPTIVE REPTILES AND AMPHIBIANS. *Bull. Philadelphia Herpetol. Soc.* 15: 43-52. 1967. *WR 135: 81*
[Philadelphia Coll. Pharmacy & Sci., Philadelphia, Pa.] Administration of drugs, internal parasites, ectoparasites, and circulatory disorders.

Feuer, Robert C. KEY TO THE ADULT AMPHIBIANS AND REPTILES OF PENNSYLVANIA. *Bull. Philadelphia Herpetol. Soc.* 15: 7-17. 1967. *WR 135: 81*
[Philadelphia Coll. Pharmacy & Sci., Philadelphia, Pa.] Does not include larval amphibians.

Fukada, Hajime. BIOLOGICAL STUDIES ON SNAKES: XII EXCAVATION OF A HIBERNACULUM (STRUCTURE). *Bull. Kyoto Univ. Educ. Ser. B Math. Nat. Sci.* 31: 23-35, illus. 1967. [From Biol. Abstr. 49(13), 1968.] *WR 135: 82*
[Kyoto Univ. Educ., Kyoto, Japan.]

Fukada, Hajime. [THE LONG-TERM SURVEY OF FOODHABITS IN *ELAPHE QUADRIVIRGATA*, AN INDICATION OF ABUNDANCE OF THE VOLE POPULATION.] *Acta Herpetol. Japonica* 2 (4): 43. Mar. 1968. [From J. Mammal. 50(2), 1969. In Japanese.] *WR 135: 82*

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[N.Y. Univ. Med. Center, New York.] Summary: Methoxyflurane is a safe, satisfactory agent to use in anesthetizing snakes and it may be adapted for short procedures or lengthy ones with a variety of anesthetic techniques ranging from "open drop" to more sophisticated closed circle anesthetic systems.

Gasperetti, John. SURVEY OF THE REPTILES OF THE SHEIKHDOM OF ABU DHABI, ARABIAN PENINSULA: PART I. A GEOGRAPHICAL SKETCH OF THE SHEIKHDOM OF ABU DHABI. *Proc. Calif. Acad. Sci.* 35(8): 141-155. 1967. [From Biol. Abstr. 49(11), 1968.] *WR 135: 82*
[Calif. Acad. Sci., San Francisco.]

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[Harvard Univ., Cambridge, Mass.]

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[Harvard Univ., Cambridge, Mass.]

Hardin, James W., James P. Schafer, and Roger W. Barbour. OBSERVATIONS ON THE ACTIVITY OF A SEAL SALAMANDER, *DESMOGNATHUS MONTICOLA*. *Herpetologica* 25(2): 150-151, 1 fig. 17 June 1969. *WR 135: 82*
[Memphis State Univ., Memphis, Tenn.] Home range and hourly activity studies.

Hardy, Jerry D. REPRODUCTIVE ACTIVITY, GROWTH, AND MOVEMENTS OF *AMBYSTOMA MABEEI* BISHOP IN NORTH CAROLINA. *Bull. Md. Herpetol. Soc.* 5(2): 65-76, 11 figs. June 1969. *WR 135: 82*
[Chesapeake Biol. Lab., Solomons, Md.] The breeding ponds vary greatly in size, depth, and amount of shading, but are similar in pH, in being subject to severe flooding and drying, in being closely associated with pine forest, and in being normally devoid of fish.--From summ.

Harris, Earl W. DISTRIBUTION OF THE HERPETOFAUNA OF DAVIES ISLAND, CENTER HILL RESERVOIR (TENNESSEE, USA). *J. Tenn. Acad. Sci.* 42(3): 87-92. 1967. [From Biol. Abstr. 49(7), 1968.] *WR 135: 82*
[Fort Detrick, Md.]

Hinsch, Hannah, and Charles P. Gandal. THE EFFECTS OF ETORPHINE (M-99), OXYMORPHONE HYDROCHLORIDE AND MEPERIDINE HYDROCHLORIDE IN REPTILES. *Copeia* 1969 (2): 404-405. 3 June 1969. *WR 135: 82*
[N.Y. Zool. Soc., Bronx.] Conclusion: High level intramuscular injections of three narcotic agents did not produce any significant effects in two species of snake and a single caiman.

Hobson, Edmund S. REMARKS ON AQUATIC HABITS OF THE GALAPAGOS MARINE IGUANA, INCLUDING SUBMERGENCE TIMES, CLEANING SYMBIOSIS, AND THE SHARK THREAT. *Copeia* 1969(2): 401-402. 3 June 1969. *WR 135: 83*
[Fisheries-Oceanography Center, P.O. Box 271, La Jolla, Calif.]

Howse, Harold D., Victor J. Ferrans, and Richard G. Hibbs. OBSERVATIONS ON THE FINE STRUCTURE OF THE VENTRICULAR MYOCARDIUM OF A SALAMANDER, *AMBYSTOMA MACULATUM* SHAW. *Herpetologica* 25(2): 75-85, 7 figs. 17 June 1969. *WR 135: 83*
[Gulf Coast Res. Lab., Ocean Springs, Miss.]

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[S. W. Inst. Biol. Acad. Sinica, Chengtu, Szechuan, China.]

Huang, Mei-Hua, S. S. Ho, S. A. Chou, T. T. Hsieh, and P. C. Hu. [FEEDING HABITS OF SNAKES FROM CHECHIANG.] *Acta Zool. Sinica* 17(2): 137-144. 1965. [From Biol. Abstr. 49(16), 1968. In Chinese with English summ.] *WR 135: 83*
Feeding habits of 53 spp.

Hurlbert, Stuart Hartley. THE MIGRATIONS AND OTHER INTERHABITAT MOVEMENTS OF *DIEMICTYLUS VIRIDESCENS* (RAFINESQUE) IN DRYDEN, NEW YORK. *Ph.D. thesis, Cornell Univ.* 216 p. 1968. [From Dissertation Abstr. 29(11B), 1969.] *WR 135: 83*

Inger, Robert F. THE SYSTEMATIC AND ZOOGEOGRAPHY OF THE AMPHIBIA OF BORNEO. *Fieldiana Zool.* 52: 1-462, illus. 1966. [From Biol. Abstr. 49(1), 1968.] *WR 135: 83*
[Field Mus. Nat. Hist., Chicago, Ill.]

Inger, Robert F. ORGANIZATION OF COMMUNITIES OF FROGS ALONG SMALL RAIN FOREST STREAMS IN SARAWAK. *J. Animal Ecol.* 38(1): 123-148, 7 figs. Feb. 1969. *WR 135: 83*
[Field Mus. Nat. Hist., Chicago, Ill.]

Khonyakina, Z. P. [LIFE SPAN AND POPULATION DYNAMICS OF DAGESTAN EARED LIZARDS.] *Sbornik Nauch. Soobshch. Kafedry Zool. Kafedry Biol. Khim. Dagestan Univ.* 2: 94-96. 1967. [From Biol. Abstr. 49(19), 1968, from Referat. Zhur., Biol., 1968, no. 11297. Transl. of Russian abstr.] *WR 135: 83*

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[Katedra Zool., Bratislava, Czechoslovakia.]

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As the Nation's principal conservation agency, the Department of the Interior has basic responsibilities for water, fish, wildlife, mineral, land, park, and recreational resources. Indian and Territorial affairs are other major concerns of this department of natural resources.

The Department works to assure the wisest choice in managing all our resources so that each shall make its full contribution to a better United States now and in the future.

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